Access DB# 171446

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Bret Chen Examiner #: 74195 Date: 11/14/05
Art Unit: 1762 Phone Number 30 2-1417 Serial Number: 10/695379
Mail Box and Bldg/Room Location: Rem 8C79 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

_____

Earliest Priority Filing Date: _____

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

A CVD method of forming a silicon-containing material using the claimed precursor

No rush on the search

****

STAFF USE ONLY	Type of Search		Vendors and cost where applicable
Searcher: EJ	NA Sequence (#)		STN
Searcher Phone #:	AA Sequence (#)		Dialog
Searcher Location:	Structure (#)		Questel/Orbit
Date Searcher Picked Up:	Bibliographic		Dr.Link
Date Completed: 11-23-05	Litigation		Lexis/Nexis
Searcher Prep & Review Time:	Fulltext		Sequence Systems
Clerical Prep Time:	Patent Family		WWW/Internet
Online Time:	Other		Other (specify)

Xiao et al
10/695379

CLAIMS

1. A process for the chemical vapor deposition of silicon nitride on a substrate using a hydrazinosilane of the formula:

claimed precursor

$$[R^1_2N\text{-}NH]_nSi(R^2)_{4-n}$$

where each R^1 is independently selected from alkyl groups of C_1 to C_6; each R^2 is independently selected from the group consisting of hydrogen, alkyl, vinyl, allyl, and phenyl; and n = 1-4.

2. The process of Claim 1 wherein the hydrazinosilane is selected from the group consisting of: Bis(1,1-dimethylhydrazino)methylsilane, Tris(1,1-dimethylhydrazino)silane, Tris(1,1-dimethylhydrazino)-t-butylsilane, Tris(1,1-dimethylhydrazino)s-butylsilane, Tris(1,1-dimethylhydrazino)ethylsilane, Bis(1,1-dimethylhydrazino)ethylsilane, Bis(1,1-dimethylhydrazino)Iso-propylsilane, Bis(1,1-dimethylhydrazino)allylsilane, Bis(1,1-dimethylhydrazino)silane, Tetrakis(1,1-dimethylhydrazino)silane, N,N',N"-Tris(dimethylamino)cyclotrisilazane, N,N',N",N'"-Tetrakis(dimethylamino)cyclotrisilazane, Tris(1,1-dimethylhydrazino)Iso-propylsilane, Tris(1,1-dimethylhydrazino)allylsilane and mixtures thereof.

3. The process of Claim 1 wherein the temperature of the substrate is in the range of approximately 100 to 800ºC.

4. The process of Claim 1 wherein the pressure is in the range of approximately 10^{-5} Torr to 760 Torr.

5. The process of Claim 1 wherein the hydrazinosilane is reacted with a nitrogen source selected from the group consisting of nitrogen, ammonia, hydrazine, amines, and mixtures thereof.

/cv

6. The process of Claim 5 wherein the molar ratio of ammonia to hydrazinosilane can be greater than or equal to zero.

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=> file reg
FILE 'REGISTRY' ENTERED AT 12:05:29 ON 23 NOV 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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     FILE 'REGISTRY' ENTERED AT 11:12:24 ON 23 NOV 2005
                E BIS(1,1-DIMETHYLHYDRAZINO)METHYLSILANE/CN
                E HYDRAZINOSILANE

     FILE 'HCAPLUS' ENTERED AT 11:16:18 ON 23 NOV 2005
L1          24117 S XIAO ?/AU
L2            831 S HOCHBERG ?/AU
L3            103 S CUTHILL ?/AU
L4              1 S L1 AND L2 AND L3
                  SEL L4 1 RN

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L6                STR
L7             50 S L6
L8           2761 S L6 FUL
                  SAV L8 CHE379/A
L9         320047 S (C(L)H(L)N(L)SI)/ELS
L10         18539 S L9 (L) 4/ELC.SUB
L11           701 S L8 AND L10
L12            14 S L5 AND L11
L13            13 S L5 NOT L12

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L14             9 S L12
L15           566 S L11
L16        110674 S (CVD OR (CHEMICAL? OR CHEM)(2A)(VAPOR? OR VAPOUR?)(2A)D
L17             2 S L14 AND L16
L18            12 S L15 AND L16

     FILE 'REGISTRY' ENTERED AT 11:25:48 ON 23 NOV 2005
L19             5 S L13 AND CL/ELS
                  E AMMONIA/CN
L20             1 S E3
                  E HYDRAZINE/CN
L21             1 S E3
                  E NITROGEN/CN
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L22           1 S E3

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L24      361390 S L20 OR AMMONIA# OR NH3
L25       67738 S L21 OR HYDRAZINE# OR NH2NH2 OR H2NNH2
L26      415110 S L22 OR N2 OR NITROGENA? OR (NITROGEN# OR N)(2A)(GAS## O
L27       41175 S (NITROGEN# OR N)(2A)(ATMOS? OR ATM#)
L28        1246 S L23 AND (L24 OR L25 OR L26 OR L27)
L29         188 S L28 AND L16
L30           1 S L29 AND (L14 OR L15)
L31          28 S ?HYDRAZINOSILAN? OR ?HYDRAZINO(2A)SILAN?
L32           1 S L29 AND L31
L33           2 S L28 AND L31
L34          68 S L23 AND L25
L35          14 S L34 AND L16

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L37       10985 S L36 (L) 4/ELC.SUB

     FILE 'HCA' ENTERED AT 12:02:51 ON 23 NOV 2005
L38       41924 S L37
L39         317 S L38 AND L25
L40           3 S L39 AND L16
L41          28 S L17 OR L18 OR L30 OR L32 OR L33 OR L35 OR L40

     FILE 'REGISTRY' ENTERED AT 12:05:29 ON 23 NOV 2005


=> d l8 que stat
L6              STR

Si-*-N-*-N
 1   2   3


NODE ATTRIBUTES:
NSPEC   IS RC     AT   1
NSPEC   IS RC     AT   2
NSPEC   IS RC     AT   3
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS   3

STEREO ATTRIBUTES: NONE
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L8 2761 SEA FILE=REGISTRY SSS FUL L6

100.0% PROCESSED 4856 ITERATIONS 2761 ANSWERS
SEARCH TIME: 00.00.01

=> file hca
FILE 'HCA' ENTERED AT 12:05:49 ON 23 NOV 2005

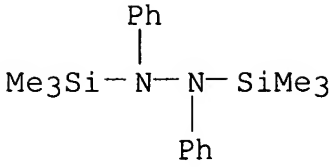
=> d l41 1-28 cbib abs hitstr hitind

L41 ANSWER 1 OF 28 HCA COPYRIGHT 2005 ACS on STN
143:163609 Forming a silicon nitride film. McSwiney, Michael L.; Moinpour, Mansour; Goodner, Michael D. (USA). U.S. Pat. Appl. Publ. US 2005163927 A1 20050728, 13 pp. (English). CODEN: USXXCO. APPLICATION: US 2004-764193 20040123.

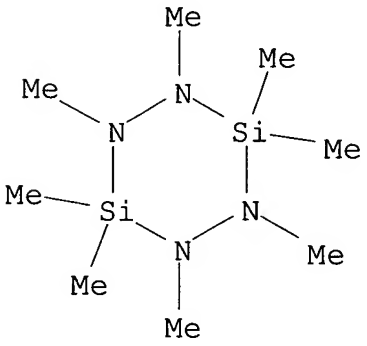
AB A Si nitride film may be deposited on a work piece using conventional deposition techniques and a selected source for use as a Si precursor. A N precursor may also be selected for film deposition. Using the selected precursor(s), the temp. for deposition may be .ltoreq.500.degree..

IT **5994-95-6**, 1,2-Bis(trimethylsilyl)-1,2-diphenylhydrazine **53213-29-9**, 1,2,3,3,4,5,6,6-Octamethyl-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-24-7**, 3,6-Bis(dimethylamino)-1,4-bis(tert-butyl)-2,5-dimethyl-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-25-8**, 3,6-Bis(tert-butylamino)-1,4-bis(tert-butyl)-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-26-9**, 1,2,4,5-Tetrakis(tert-butyl)-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-27-0**, 3,6-Divinyl-1,4-bis(tert-butyl)-2,5-dimethyl-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-28-1**, 3-Phenyl-1,4-bis(tert-butyl)-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-29-2**, 1,2,4,5-Tetramethyl-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-30-5**, 1,2-Bis(trimethylsilyl)-1,2-bis(tert-butyl)hydrazine
(deposition of silicon nitride films using precursor of)

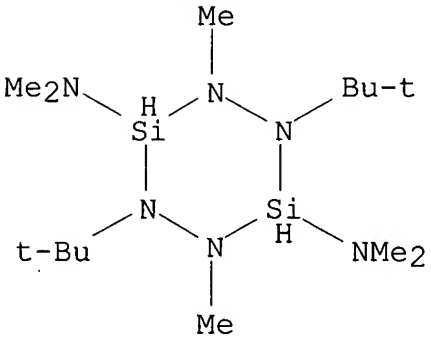
RN 5994-95-6 HCA
CN Hydrazine, 1,2-diphenyl-1,2-bis(trimethylsilyl)- (9CI) (CA INDEX NAME)



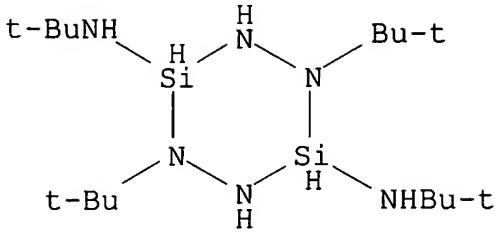
RN 53213-29-9 HCA
CN 1,2,4,5-Tetraaza-3,6-disilacyclohexane, 1,2,3,3,4,5,6,6-octamethyl- (9CI) (CA INDEX NAME)



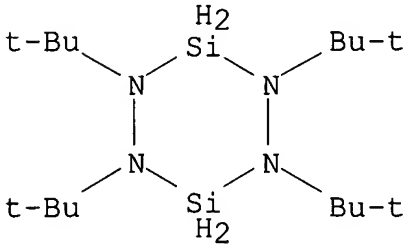
RN 860299-24-7 HCA
CN 1,2,4,5-Tetraaza-3,6-disilacyclohexane-3,6-diamine, 1,4-bis(1,1-dimethylethyl)-N,N,N',N',2,5-hexamethyl- (9CI) (CA INDEX NAME)



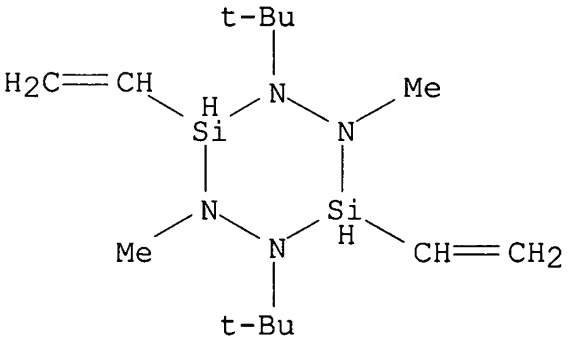
RN 860299-25-8 HCA
CN 1,2,4,5-Tetraaza-3,6-disilacyclohexane-3,6-diamine, N,N',1,4-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



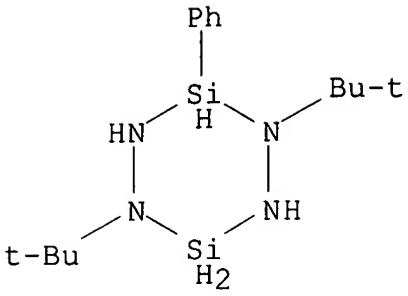
RN 860299-26-9 HCA
CN 1,2,4,5-Tetraaza-3,6-disilacyclohexane, 1,2,4,5-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



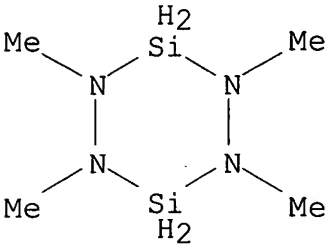
RN 860299-27-0 HCA
CN 1,2,4,5-Tetraaza-3,6-disilacyclohexane, 1,4-bis(1,1-dimethylethyl)-3,6-diethenyl-2,5-dimethyl- (9CI) (CA INDEX NAME)



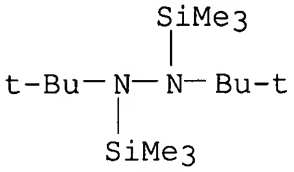
RN 860299-28-1 HCA
CN 1,2,4,5-Tetraaza-3,6-disilacyclohexane, 1,4-bis(1,1-dimethylethyl)-3-phenyl- (9CI) (CA INDEX NAME)



RN 860299-29-2 HCA
CN 1,2,4,5-Tetraaza-3,6-disilacyclohexane, 1,2,4,5-tetramethyl- (9CI) (CA INDEX NAME)



RN 860299-30-5 HCA
CN Hydrazine, 1,2-bis(1,1-dimethylethyl)-1,2-bis(trimethylsilyl)- (9CI) (CA INDEX NAME)



IC ICM C23C016-00
INCL 427248100; 118715000
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 29, 76
IT **Vapor deposition** process
(**chem.**; of silicon nitride films using various silicon and nitrogen precursors)
IT 287-62-7D, Cyclodisilazane, derivs. 291-35-0, 1,2,4,5-Tetraaza-3,6-disilacyclohexane 291-35-0D, 1,2,4,5-Tetraaza-3,6-disilacyclohexane, derivs. 302-01-2, Hydrazine, processes 302-01-2D, Hydrazine, derivs. **5994-95-6**, 1,2-Bis(trimethylsilyl)-1,2-diphenylhydrazine 7664-41-7, Ammonia,

processes 25573-59-5, Tetrasilylhydrazine 25743-15-1, 1,1,2-Trisilylhydrazine 28848-29-5, 1,2-Disilylhydrazine **53213-29-9**, 1,2,3,3,4,5,6,6-Octamethyl-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-24-7**, 3,6-Bis(dimethylamino)-1,4-bis(tert-butyl)-2,5-dimethyl-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-25-8**, 3,6-Bis(tert-butylamino)-1,4-bis(tert-butyl)-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-26-9**, 1,2,4,5-Tetrakis(tert-butyl)-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-27-0**, 3,6-Divinyl-1,4-bis(tert-butyl)-2,5-dimethyl-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-28-1**, 3-Phenyl-1,4-bis(tert-butyl)-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-29-2**, 1,2,4,5-Tetramethyl-1,2,4,5-tetraaza-3,6-disilacyclohexane **860299-30-5**, 1,2-Bis(trimethylsilyl)-1,2-bis(tert-butyl)hydrazine
(deposition of silicon nitride films using precursor of)

L41 ANSWER 2 OF 28 HCA COPYRIGHT 2005 ACS on STN
143:107808 Method for forming a low-k dielectric layer for a semiconductor device. Ahn, Jae-Young; Kim, Jin-Gyun; Kim, Hee-Seok; No, Jin-Tae; Yang, Sang-Ryol; Lee, Sung-Hae; Kim, Hong-Suk; Lim, Ju-Wan; Kim, Young-Seok; Hyung, Yong-Woo; Kang, Man-sug (Samsung Electronics Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2005148201 A1 20050707, 10 pp., Cont.-in-part of U.S. Ser. No. 378,681. (English). CODEN: USXXCO. APPLICATION: US 2004-981731 20041105. PRIORITY: KR 2002-11671 20020305; US 2003-2003/378681 20030305.

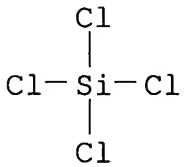
AB A method for forming a low-k dielec. layer for a semiconductor device using an ALD process including (a) forming predetd. interconnection patterns on a semiconductor substrate, (b) supplying a 1st and a 2nd reactive material to a chamber having the substrate therein, thereby adsorbing the 1st and 2nd reactive materials on a surface of the substrate, (c) supplying a 1st gas to the chamber to purge the 1st and 2nd reactive materials that remain unreacted, (d) supplying a 3rd reactive material to the chamber, thereby causing a reaction between the 1st and 2nd materials and the 3rd reactive material to form a monolayer, (e) supplying a 2nd gas to the chamber to purge the 3rd reactive material that remains unreacted in the chamber and a byproduct; and (f) repeating (b) through (e) a predetd. no. of times to form a SiBN ternary layer having a predetd. thickness on the substrate.

IT **302-01-2**, **Hydrazine**, processes **10026-04-7**, Silicon chloride (SiCl4)
(method for forming low-.kappa. dielec. layer for semiconductor device)

RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)

H_2N-NH_2

RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



IC ICM H01L021-44
INCL 438778000
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 48
IT **Vapor deposition** process
(**chem.**, ALD; method for forming low-.kappa. dielec. layer for semiconductor device)
IT **302-01-2**, **Hydrazine**, processes 1333-74-0, Hydrogen, processes 4109-96-0, Silicon chloride hydride (SiCl2H2) 7637-07-2, Boron fluoride (BF3), processes 7664-41-7, Ammonia, processes 7803-62-5, Silicon hydride (SiH4), processes **10026-04-7**, Silicon chloride (SiCl4) 10294-33-4, Boron bromide (BBr3) 10294-34-5, Boron chloride (BCl3) 13465-77-5, Silicon chloride (Si2Cl6) 19287-45-7, Boron hydride (B2H6)
(method for forming low-.kappa. dielec. layer for semiconductor device)

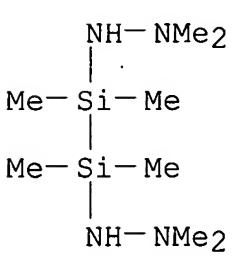
L41 ANSWER 3 OF 28 HCA COPYRIGHT 2005 ACS on STN
142:355397 Composition and method for low temperature **chemical vapor deposition** of silicon-containing films including silicon carbonitride and silicon oxycarbonitride films. Wang, Ziyun; Xu, Chongying; Hendrix, Bryan; Roeder, Jeffrey; Chen, Tianniu; Baum, Thomas H. (USA). U.S. Pat. Appl. Publ. US 2005080286 A1 20050414, 10 pp., Cont.-in-part of U.S. Ser. No. 683,501. (English). CODEN: USXXCO. APPLICATION: US 2004-870106 20040617. PRIORITY: US 2003-2003/683501 20031010.
AB Silicon precursors for forming silicon-contg. films in the manuf. of semiconductor devices, such as films including silicon carbonitride, silicon oxycarbonitride, and silicon nitride (Si3N4), and a method of depositing the silicon precursors on substrates using low temp. (e.g., < 550.degree.) **chem. vapor deposition** processes, for fabrication of ULSI devices and device structures. Thus, lithiation of Et2NH with BuLi in hexanes followed by treatment with ClMe2SiSiMe2Cl gave 85%

Me2(Et2N)Si(NEt2)Me2 useful as precursor for silicon-contg. films.

IT **6026-22-8P**
(prepn. of amino and hydrazino disilanes as precursors for low temp. **chem. vapor deposition** of silicon-contg. films including silicon carbonitride and silicon oxycarbonitride films)

RN 6026-22-8 HCA

CN Hydrazine, 1,1'-(1,1,2,2-tetramethyl-1,2-disilanediyl)bis[2,2-dimethyl- (9CI) (CA INDEX NAME)



IC ICM C07F007-02
ICS C07F007-10

INCL 556410000

CC 29-6 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 76

ST amino hydrazino disilane prepn low temp **chem vapor deposition**; silicon carbonitride oxycarbonitride nitride film deposition precursor prepn

IT **Vapor deposition** process
(**chem.**; prepn. of amino and hydrazino disilanes as precursors for low temp. **chem. vapor deposition** of silicon-contg. films including silicon carbonitride and silicon oxycarbonitride films)

IT Semiconductor devices
(prepn. of amino and hydrazino disilanes as precursors for low temp. **chem. vapor deposition** of silicon-contg. films including silicon carbonitride and silicon oxycarbonitride films)

IT **6026-22-8P** 119351-06-3P
(prepn. of amino and hydrazino disilanes as precursors for low temp. **chem. vapor deposition** of silicon-contg. films including silicon carbonitride and silicon oxycarbonitride films)

IT 57-14-7, 1,1-Dimethylhydrazine 109-89-7, Diethylamine, reactions 4342-61-4, 1,2-Dichloro-1,1,2,2-tetramethyldisilane
(prepn. of amino and hydrazino disilanes as precursors for low temp. **chem. vapor deposition** of silicon-contg. films including silicon carbonitride and silicon oxycarbonitride films)

IT 12033-89-5P, Silicon nitride, preparation 64477-28-7P, Silicon carbonitride
(prepn. of amino and hydrazino disilanes as precursors for low temp. **chem. vapor deposition** of silicon-contg. films including silicon carbonitride and silicon oxycarbonitride films)

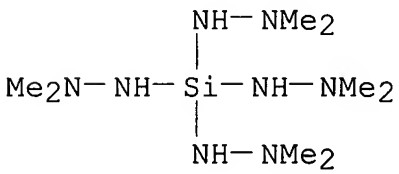
L41 ANSWER 4 OF 28 HCA COPYRIGHT 2005 ACS on STN
142:355395 Preparation of monosilane or disilane derivatives and method for low temperature deposition of silicon-containing films using the same. Wang, Ziyun; Xu, Chongying; Baum, Thomas H. (USA). U.S. Pat. Appl. Publ. US 2005080285 A1 20050414, 8 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-683501 20031010.

AB This invention relates to silicon precursor compns. for forming silicon-contg. films by low temp. (e.g., <550.degree.) **chem . vapor deposition** processes for fabrication of ULSI devices and device structures. Such silicon precursor compns. comprise at least a silane or disilane deriv. that is substituted with at least one alkylhydrazine functional groups and is free of halogen substitutes. Thus, reaction of Me2NNH2 with SiCl4 in hexanes in the presence of Et3N gave 65% title compd., Si(NHNMe2)4; the crystal structure and STA plot of which is discussed.

IT **17883-37-3P**
(crystal structure; prepn. of hydrazino monosilane or disilane derivs. and method for low temp. deposition of silicon-contg. films using the same)

RN 17883-37-3 HCA

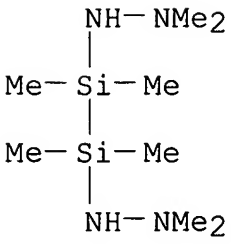
CN 2,3,5,6-Tetraaza-4-silaheptane, 4,4-bis(2,2-dimethylhydrazino)-2,6-dimethyl- (8CI, 9CI) (CA INDEX NAME)



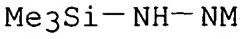
IT **6026-22-8P 13271-94-8P 848939-99-1P**
(prepn. of hydrazino monosilane or disilane derivs. and method for low temp. deposition of silicon-contg. films using the same)

RN 6026-22-8 HCA

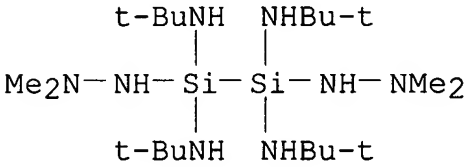
CN Hydrazine, 1,1'-(1,1,2,2-tetramethyl-1,2-disilanediyl)bis[2,2-dimethyl- (9CI) (CA INDEX NAME)



RN 13271-94-8 HCA
CN Hydrazine, 1,1-dimethyl-2-(trimethylsilyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 848939-99-1 HCA
CN 1,1,2,2-Disilanetetramine, N,N',N'',N'''-tetrakis(1,1-dimethylethyl)-1,2-bis(2,2-dimethylhydrazino)- (9CI) (CA INDEX NAME)



IC ICM C07F007-10
INCL 556410000
CC 29-6 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 76
IT **Vapor deposition** process
(**chem.**; prepn. of hydrazino monosilane or disilane derivs. and method for low temp. deposition of silicon-contg. films using the same)
IT **17883-37-3P**
(crystal structure; prepn. of hydrazino monosilane or disilane derivs. and method for low temp. deposition of silicon-contg. films using the same)
IT **6026-22-8P 13271-94-8P 848939-99-1P**
(prepn. of hydrazino monosilane or disilane derivs. and method for low temp. deposition of silicon-contg. films using the same)

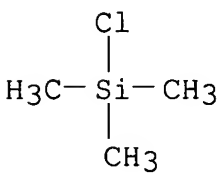
L41 ANSWER 5 OF 28 HCA COPYRIGHT 2005 ACS on STN
142:271923 Precursor compositions and processes for **MOCVD** of barrier materials in semiconductor manufacturing. Roeder, Jeffrey F.; Xu, Chongying; Hendrix, Bryan C.; Baum, Thomas H. (USA). U.S.

Pat. Appl. Publ. US 2005042888 A1 20050224, 8 pp. (English).
CODEN: USXXCO. APPLICATION: US 2003-643110 20030818.

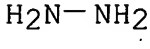
AB Metalorg. precursors of the formula: (R1R2N)a-bMXb wherein: M is the precursor metal center, selected from the group of Ta, Ti, W, Nb, Si, Al and B; a is a no. equal to the valence of M; 1.ltoreq.b.ltoreq.(a-1); R1 and R2 can be the same as or different from one another, and are each independently selected from the group of H, C1-C4 alkyl, C3-C6 cycloalkyl, and R03Si, where each R0 can be the same or different and each R0 is independently selected from H and C1-C4 alkyl; and X is selected from the group of Cl, F, Br and I. Precursors of such formula are useful for **CVD** (**MOCVD**) of conductive barrier materials in the manuf. of microelectronic device structures, e.g., by at. layer **CVD** on a substrate bearing N-contg. surface functionality. Further described is a method of forming Si3N4 on a substrate at low temp., e.g., using at. layer **CVD** (ALCVD).

IT **75-77-4**, Trimethylchlorosilane, processes **302-01-2** , **Hydrazine**, processes **302-01-2D**, **Hydrazine**, dialkyl and tetraalkyl **18395-90-9**, Di(tert-butyl)dichlorosilane
(precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)

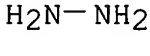
RN 75-77-4 HCA
CN Silane, chlorotrimethyl- (8CI, 9CI) (CA INDEX NAME)



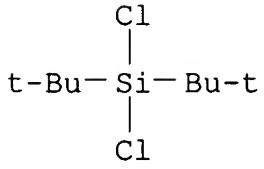
RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 18395-90-9 HCA
CN Silane, dichlorobis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



IC ICM B05D003-02
ICS H01L021-31; H01L021-469
INCL 438780000; 427384000
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 48, 75
ST ALD **OMCVD** barrier semiconductor device fabrication
IT Silanes
(alkyl; precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT Azines
(borazines; precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT Silanes
(halosilanes; precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT Vapor deposition process
(metalorg., ALD; precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT Diffusion barrier
(precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT Amines, processes
Boranes
Silanes
(precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT Nitrides
(precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT **75-77-4**, Trimethylchlorosilane, processes **302-01-2**, **Hydrazine**, processes **302-01-2D**, **Hydrazine**, dialkyl and tetraalkyl 4109-96-0, Dichlorosilane 7429-90-5D, Aluminum, organometallic compds. and complexes 7440-03-1D, Niobium, organometallic compds. and complexes 7440-21-3D, Silicon, organometallic compds. and complexes 7440-25-7D, Tantalum, organometallic compds. and complexes 7440-32-6D, Titanium, organometallic compds. and complexes 7440-33-7D, Tungsten, organometallic compds. and complexes 7440-42-8D, Boron, organometallic compds. and complexes 7664-41-7, Ammonia, processes 7784-21-6, Alane 7784-21-6D,

Alane, derivs. 13465-78-6, Monochlorosilane 17702-41-9, Decaborane **18395-90-9**, Di(tert-butyl)dichlorosilane
(precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT 12033-89-5P, Silicon nitride (Si3N4), processes
(precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT 121368-53-4, Titanium nitride silicide
(precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)
IT 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7727-37-9, Nitrogen, uses 10024-97-2, Dinitrogen oxide, uses
(purge gas; precursor compns. and processes for ALD **CVD** of barrier materials in semiconductor manufg.)

L41 ANSWER 6 OF 28 HCA COPYRIGHT 2005 ACS on STN
141:148547 Precursors for depositing silicon containing films and processes thereof. Xiao, Manchao; Hochberg, Arthur Kenneth; Cuthill, Kirk Scott (Air Products and Chemicals, Inc., USA). Eur. Pat. Appl. EP 1441042 A1 20040728, 23 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK. (English). CODEN: EPXXDW. APPLICATION: EP 2004-912 20040116. PRIORITY: US 2003-PV442183 20030123; US 2003-695379 20031027.
AB This invention describes processes for precursors for Si dielec. depositions of Si nitride, Si oxide and Si oxynitride on a substrate using a **hydrazinosilane** of the formula: [R1 2N-NH]nSi(R2)4-n where each R1 is independently selected from alkyl groups of C1 to C6; each R2 is independently selected from the group consisting of hydrogen, alkyl, vinyl, allyl, and phenyl; and n = 1-4. Some of the **hydrazinosilanes** are novel precursors.
IT **302-01-2**, **Hydrazine**, processes **7664-41-7**, **Ammonia**, processes **7727-37-9**, Nitrogen, processes **727416-08-2 727416-12-8 727416-13-9 727416-14-0 727416-15-1 727416-16-2 727416-18-4 727416-20-8**
(precursors; deposition of silicon contg. films using **hydrazinosilanes** as precursors)

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RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)

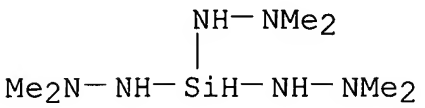
H_2N-NH_2

RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

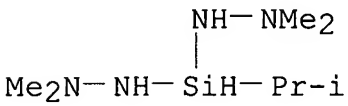
NH_3

RN 7727-37-9 HCA
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

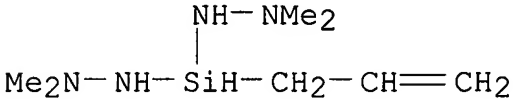
RN 727416-08-2 HCA
CN Hydrazine, 1,1',1''-silylidynetris[2,2-dimethyl- (9CI) (CA INDEX NAME)



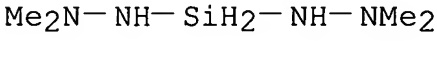
RN 727416-12-8 HCA
CN Hydrazine, 1,1'-[(1-methylethyl)silylene]bis[2,2-dimethyl- (9CI) (CA INDEX NAME)



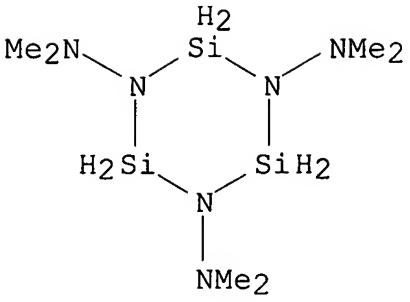
RN 727416-13-9 HCA
CN Hydrazine, 1,1'-(2-propenylsilylene)bis[2,2-dimethyl- (9CI) (CA INDEX NAME)



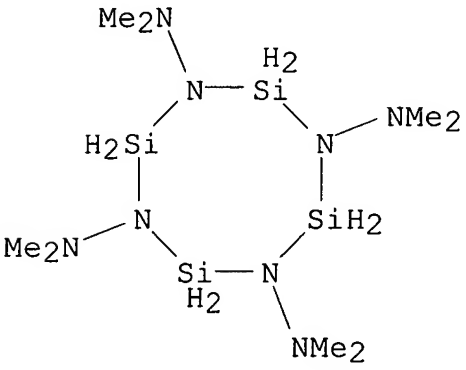
RN 727416-14-0 HCA
CN Hydrazine, 1,1'-silylenebis[2,2-dimethyl- (9CI) (CA INDEX NAME)



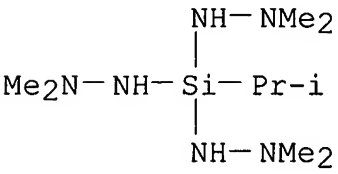
RN 727416-15-1 HCA
CN Cyclotrisilazane-1,3,5-triamine, N,N,N',N',N'',N''-hexamethyl- (9CI) (CA INDEX NAME)



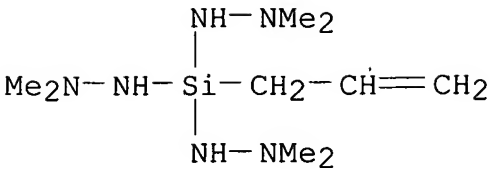
RN 727416-16-2 HCA
CN Cyclotetrasilazane-1,3,5,7-tetramine, N,N,N',N',N'',N'',N''',N'''-octamethyl- (9CI) (CA INDEX NAME)



RN 727416-18-4 HCA
CN Hydrazine, 1,1',1''-[(1-methylethyl)silylidyne]tris[2,2-dimethyl- (9CI) (CA INDEX NAME)

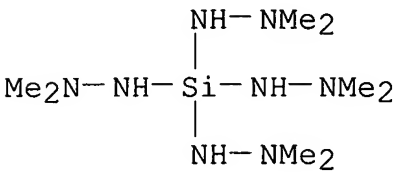


RN 727416-20-8 HCA
CN Hydrazine, 1,1',1''-(2-propenylsilylidyne)tris[2,2-dimethyl- (9CI) (CA INDEX NAME)

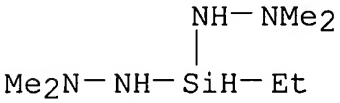


IT **17883-37-3P 18134-66-2P 18163-85-4P**
727416-09-3P 727416-10-6P 727416-11-7P
(precursors; deposition of silicon contg. films using **hydrazinosilanes** as precursors)

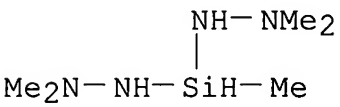
RN 17883-37-3 HCA
CN 2,3,5,6-Tetraaza-4-silaheptane, 4,4-bis(2,2-dimethylhydrazino)-2,6-dimethyl- (8CI, 9CI) (CA INDEX NAME)



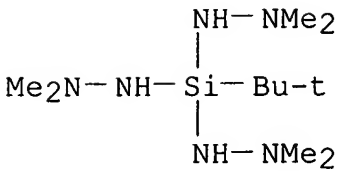
RN 18134-66-2 HCA
CN Hydrazine, 1,1'-(ethylsilylene)bis[2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



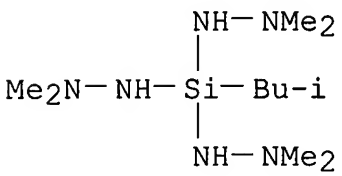
RN 18163-85-4 HCA
CN Hydrazine, 1,1'-(methylsilylene)bis[2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



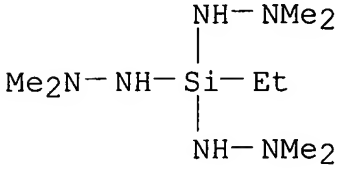
RN 727416-09-3 HCA
CN Hydrazine, 1,1',1''-[(1,1-dimethylethyl)silylidyne]tris[2,2-dimethyl- (9CI) (CA INDEX NAME)



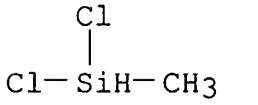
RN 727416-10-6 HCA
CN Hydrazine, 1,1',1''-[(2-methylpropyl)silylidyne]tris[2,2-dimethyl- (9CI) (CA INDEX NAME)



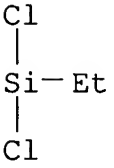
RN 727416-11-7 HCA
CN Hydrazine, 1,1',1''-(ethylsilylidyne)tris[2,2-dimethyl- (9CI) (CA INDEX NAME)



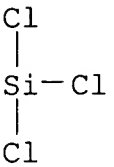
IT **75-54-7**, Methyldichlorosilane **115-21-9**, Ethyltrichlorosilane **10026-04-7**, Silicon tetrachloride **18169-57-8**, Isobutyltrichlorosilane **18171-74-9**, tert-Butyltrichlorosilane
(synthesis of **hydrazinosilanes**)
RN 75-54-7 HCA
CN Silane, dichloromethyl- (8CI, 9CI) (CA INDEX NAME)



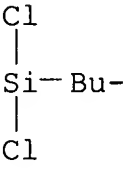
RN 115-21-9 HCA
CN Silane, trichloroethyl- (8CI, 9CI) (CA INDEX NAME)



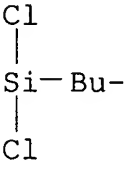
RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



RN 18169-57-8 HCA
CN Silane, trichloro(2-methylpropyl)- (9CI) (CA INDEX NAME)



RN 18171-74-9 HCA
CN Silane, trichloro(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



IC ICM C23C016-34
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
ST silicon contg film deposition precursor **hydrazinosilane**
IT Vapor deposition process
(at. layer deposition; deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT **Vapor deposition** process
(**chem.**; **deposition** of silicon contg. films using **hydrazinosilanes** as precursors)

IT Dielectric films
(deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT Optical imaging devices
(flat panels, substrate; deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT Vapor deposition process
(plasma; deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT Amines, processes
(precursors; deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT Semiconductor devices
(substrate; deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT 7631-86-9, Silicon oxide, processes 11105-01-4, Silicon oxynitride 12033-89-5, Silicon nitride, processes
(films; deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT **302-01-2**, **Hydrazine**, processes **7664-41-7**, **Ammonia**, processes **7727-37-9**, Nitrogen, processes **727416-08-2 727416-12-8 727416-13-9 727416-14-0 727416-15-1 727416-16-2 727416-18-4 727416-20-8**
(precursors; deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT **17883-37-3P 18134-66-2P 18163-85-4P 727416-09-3P 727416-10-6P 727416-11-7P**
(precursors; deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT 7440-21-3, Silicon, processes
(substrate; deposition of silicon contg. films using **hydrazinosilanes** as precursors)
IT 57-14-7, 1,1-Dimethylhydrazine **75-54-7**, Methyldichlorosilane **115-21-9**, Ethyltrichlorosilane **10026-04-7**, Silicon tetrachloride **18169-57-8**, Isobutyltrichlorosilane **18171-74-9**, tert-Butyltrichlorosilane
(synthesis of **hydrazinosilanes**)

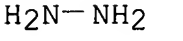
L41 ANSWER 7 OF 28 HCA COPYRIGHT 2005 ACS on STN
140:278734 Low temperature deposition of silicon based thin films by single-wafer hot-wall rapid thermal **chemical vapor deposition**. Senzaki, Yoshihide; Barelli, Carl; Teasdale, Dana; Sisson, Joseph (Asml US, Inc., USA; Aviza Technology, Inc.). PCT Int. Appl. WO 2004023525 A2 20040318, 16 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM,

HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2003-US27754 20030905. PRIORITY: US 2002-2002/PV408709 20020905.

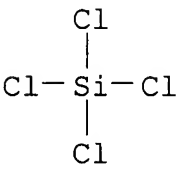
AB The present invention provides a single-wafer hot-wall RTCVD system and method capable of achieving high deposition rates, preferably of up to and over 1000 .ANG./min, to deposit Si nitride films or layers (Si3N4) using reactants including but not limited to Si2H6 with NH3 at a low temps. of up to .apprx.550.degree..

IT **302-01-2**, **Hydrazine**, processes **10026-04-7**, Silicon chloride (SiCl4)
(precursors; low temp. deposition of silicon based thin films by single-wafer hot-wall rapid thermal **chem. vapor deposition**)

RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



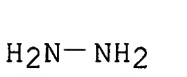
IC ICM H01L
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
ST silicon nitride film deposition rapid thermal **CVD**
IT **Vapor deposition** process
(**chem.**, rapid thermal; low temp. deposition of silicon based thin films by single-wafer hot-wall rapid thermal **chem. vapor deposition**)
IT Amides, processes
Amines, processes
Imides
(precursors; low temp. deposition of silicon based thin films by single-wafer hot-wall rapid thermal **chem. vapor deposition**)

IT 12033-89-5, Silicon nitride, uses
(films; low temp. deposition of silicon based thin films by single-wafer hot-wall rapid thermal **chem. vapor deposition**)
IT 7722-84-1, Hydrogen peroxide, processes 7732-18-5, Water, processes 7782-44-7, Oxygen, processes 10024-97-2, Nitrogen oxide (N2O), processes 10028-15-6, Ozone, processes 10102-43-9, Nitrogen oxide (NO), processes 17778-80-2, Atomic oxygen, processes
(oxidant; low temp. deposition of silicon based thin films by single-wafer hot-wall rapid thermal **chem. vapor deposition**)
IT **302-01-2, Hydrazine**, processes 1590-87-0, Silicon hydride (Si2H6) 4109-96-0, Silicon chloride hydride (SiCl2H2) 7664-41-7, Ammonia, processes 7803-62-5, Silicon hydride (SiH4), processes 10025-78-2, Trichlorosilane **10026-04-7**, Silicon chloride (SiCl4) 13465-77-5, Silicon chloride (Si2Cl6) 17778-88-0, Atomic nitrogen, processes
(precursors; low temp. deposition of silicon based thin films by single-wafer hot-wall rapid thermal **chem. vapor deposition**)

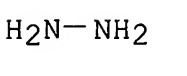
L41 ANSWER 8 OF 28 HCA COPYRIGHT 2005 ACS on STN
140:155786 Method of forming a metal oxynitride and metal silicon oxynitride layer by a vapor deposition process. Senzaki, Yoshihide; Lee, Sang-in (ASML US, Inc., USA; Aviza Technology, Inc.). PCT Int. Appl. WO 2004010466 A2 20040129, 18 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2003-US22060 20030716. PRIORITY: US 2002-2002/PV396744 20020719.
AB The invention relates to a method of forming a metal oxynitride and metal silicon oxynitride layer by a vapor deposition process, where the materials are suitable for forming stack dielecs. The invention is directed to gate and capacitor dielecs. for use in making advanced high-k stack structures. A metal alkyamide is used in a **MOCVD** or ALD process to create metal oxynitride or metal silicon oxynitride dielec. film. The metal oxynitride or metal silicon oxynitride films can be positioned between a silicon substrate and a doped polycryst. silicone (Poly Si) or a metal electrode layer.
IT **302-01-2, Hydrazine**, reactions **302-01-2D**

, **Hydrazine**, alkyl derivs. **10026-04-7**,
Tetrachlorosilane
(vapor deposition precursor; method of forming metal oxynitride and metal silicon oxynitride layer by vapor deposition process)

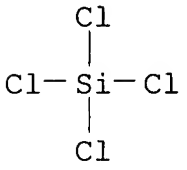
RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



IC ICM H01L
CC 76-10 (Electric Phenomena)
Section cross-reference(s): 75
IT **302-01-2**, **Hydrazine**, reactions **302-01-2D**
, **Hydrazine**, alkyl derivs. 1590-87-0, DiSilane
4109-96-0, Dichlorosilane 7664-41-7, Ammonia, reactions
7727-37-9, Nitrogen, reactions 7803-62-5, Silane, reactions
10025-78-2, Trichlorosilane **10026-04-7**, Tetrachlorosilane
13436-03-8, Bis(trimethylsilyl)diazene 13465-77-5,
Hexachlorodisilane
(vapor deposition precursor; method of forming metal oxynitride and metal silicon oxynitride layer by vapor deposition process)

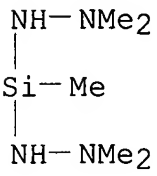
L41 ANSWER 9 OF 28 HCA COPYRIGHT 2005 ACS on STN
140:85266 Silyl derivatives of asymmetric dimethylhydrazine as a regents for synthesis of composite layers in silicon-structures. Voronkov, M. G.; Smirnova, T. P.; Yakovkina, L. V.; Badalyan, A. M.; Lopyrev, V. A.; Fomina, A. N.; Rakhlin, V. I. (Inst. Khim., SO RAN, Russia). Izvestiya Vysshikh Uchebnykh Zavedenii, Materialy Elektronnoi Tekhniki (4), 57-60 (Russian) 2002. CODEN: IVUZD7. Publisher: Izdatel'skii Dom "Ruda i Metally".
AB The prodn. of silicon nitride type dielec. films on Si is achieved

using dimethyl(2,2-dimethylhydrazino)silane in He-H2 plasma **CVD**. The rate of film deposition decreases as the substrate temp. increases at 0-600.degree. and increases as the pressure increases. The spectra of the silicon carbide nitride oxide films is given. The films were annealed and the refractive indexes were measured.

IT **6026-17-1**, Dimethylbis(2,2-dimethylhydrazino)silane
(plasma **CVD** of silicon carbide nitride oxide using dimethyl(dimethylhydrazino)silane in He or H2)

RN 6026-17-1 HCA

CN Hydrazine, 1,1'-(dimethylsilylene)bis[2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



CC 76-3 (Electric Phenomena)
Section cross-reference(s): 73, 75

ST silicon carbide nitride oxide methyldimethylhydrazinosilane plasma **CVD**

IT Pressure
(in plasma **CVD** of silicon carbide nitride oxide using dimethyl(dimethylhydrazino)silane in He or H2)

IT Vapor deposition process
(plasma; plasma **CVD** of silicon carbide nitride oxide using dimethyl(dimethylhydrazino)silane in He or H2)

IT 1333-74-0, Hydrogen, processes **6026-17-1**, Dimethylbis(2,2-dimethylhydrazino)silane
(plasma **CVD** of silicon carbide nitride oxide using dimethyl(dimethylhydrazino)silane in He or H2)

IT 7440-21-3, Silicon, processes
(plasma **CVD** of silicon carbide nitride oxide using dimethyl(dimethylhydrazino)silane in He or H2)

IT 7440-59-7, Helium, processes
(plasma **CVD** of silicon carbide nitride oxide using dimethyl(dimethylhydrazino)silane in He or H2)

IT 102819-99-8P, Silicon carbide nitride oxide
(plasma **CVD** of silicon carbide nitride oxide using dimethyl(dimethylhydrazino)silane in He or H2)

L41 ANSWER 10 OF 28 HCA COPYRIGHT 2005 ACS on STN

139:384750 Microstructure and chemical bonding in silicon carbonitride films synthesized by plasma enhanced **chemical vapor deposition**. Smirnova, T. P.; Badalyan, A.

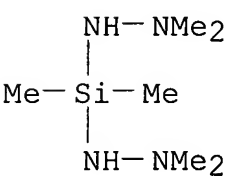
M.; Borisov, V. O.; Yakovkina, L. V.; Kaichev, V. V.; Shmakov, A. N.; Nartova, A. V.; Rakhlin, V. I.; Fomina, A. N. (Siberian Branch, Nikolaev Institute of Inorganic Chemistry, Russian Academy of Sciences, Novosibirsk, Russia). Journal of Structural Chemistry (Translation of Zhurnal Strukturnoi Khimii), 44(1), 169-173 (English) 2003. CODEN: JSTCAM. ISSN: 0022-4766. Publisher: Kluwer Academic/Consultants Bureau.

AB Silicon carbonitride films were synthesized by plasma enhanced **chem. vapor deposition** using silyl derivs. of asym. dimethylhydrazine, (CH3)2HSiNHN(CH3)2 and (CH3)2Si[NHN(CH3)2]2, as mol. precursors. The film material consists of an amorphous matrix with nanocryst. inclusions. Indexing of synchrotron radiation X-ray diffraction patterns suggests that the structure of the nanocrystals is tetragonal with lattice parameters a = 9.6.ANG. and c = 6.4.ANG.. X-ray photoelectron spectra indicate that Si-N and C-N sp3 hybrid bonds are predominant. The absence of G- or D-modes in Raman spectra, which are otherwise typical of structures possessing sp2 bonding, provides further support for the tetragonal structure of the nanocrystals.

IT **6026-17-1 318981-38-3**
(precursor; microstructure and chem. bonding in silicon carbonitride films synthesized by plasma enhanced **CVD**)

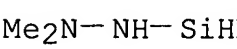
RN 6026-17-1 HCA

CN Hydrazine, 1,1'-(dimethylsilylene)bis[2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 318981-38-3 HCA

CN Hydrazine, 2-(dimethylsilyl)-1,1-dimethyl- (9CI) (CA INDEX NAME)



CC 57-9 (Ceramics)

ST silicon carbonitride film synthesis plasma **CVD** microstructure bonding nanocrystal

IT Microstructure
Nanocrystals
(microstructure and chem. bonding in silicon carbonitride films synthesized by plasma enhanced **CVD**)

IT Inclusion bodies

(nanocryst.; microstructure and chem. bonding in silicon carbonitride films synthesized by plasma enhanced **CVD**)

IT Vapor deposition process
(plasma; microstructure and chem. bonding in silicon carbonitride films synthesized by plasma enhanced **CVD**)

IT 64477-28-7P, Silicon carbonitride
(films; microstructure and chem. bonding in silicon carbonitride films synthesized by plasma enhanced **CVD**)

IT **6026-17-1 318981-38-3**
(precursor; microstructure and chem. bonding in silicon carbonitride films synthesized by plasma enhanced **CVD**)

L41 ANSWER 11 OF 28 HCA COPYRIGHT 2005 ACS on STN
139:331334 Formation of insulating layers in semiconductor devices having a multilayer nanolaminate structure of SiNx thin film and BN thin film. Ahn, Jae-Young; Hyung, Yong-Woo; Kim, Young-Seok; Kang, Man-Sug (Samsung Electronics Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2003201540 A1 20031030, 13 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-422283 20030424. PRIORITY: KR 2002-22516 20020424.

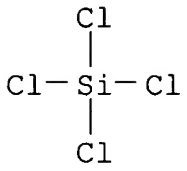
AB The present invention relates generally to an insulating layer film formed on a substrate of a semiconductor device, and particularly to a dielec. film with a multilayer nanolaminate structure consisting of a boron nitride thin film and a silicon nitride thin film capable of improving the properties of a wet etching and lowering a dielec. const. More particularly, the present invention relates to a method for depositing the multilayer nanolaminate thin film using an at. layer deposition (ALD) process. The insulating layer of the present invention has a multilayer nanolaminate structure consisting of alternating B nitride thin films and Si nitride thin films formed by the following steps: (a) depositing a Si nitride thin film on a wafer, (b) depositing a B nitride thin film on the Si nitride thin film, and (c) forming the multilayer nanolaminate thin film by alternately repeating steps (a) and (b).

IT **302-01-2, Hydrazine**, reactions **10026-04-7**
, Tetrachlorosilane
(vapor deposition precursor; formation of insulating layers in semiconductor devices having a multilayer nanolaminate structure of SiNx thin film and BN thin film)

RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)

H_2N-NH_2

RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



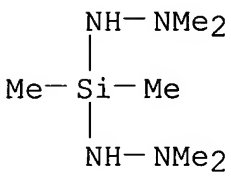
IC ICM H01L021-4763
ICS H01L023-52; H01L021-31; H01L029-40; H01L023-48; H01L021-469
INCL 257760000; 438763000; 438624000
CC 76-3 (Electric Phenomena)
IT **Vapor deposition** process
(**chem.**, at. layer; formation of insulating layers in semiconductor devices having a multilayer nanolaminate structure of SiNx thin film and BN thin film)
IT **302-01-2**, **Hydrazine**, reactions 1590-87-0, Disilane 4109-96-0, Dichlorosilane 7637-07-2, Boron trifluoride, reactions 7664-41-7, Ammonia, reactions 7803-62-5, Silane, reactions **10026-04-7**, Tetrachlorosilane 10294-33-4, Boron tribromide 10294-34-5, Boron trichloride 13283-31-3, Borane, reactions
(vapor deposition precursor; formation of insulating layers in semiconductor devices having a multilayer nanolaminate structure of SiNx thin film and BN thin film)

L41 ANSWER 12 OF 28 HCA COPYRIGHT 2005 ACS on STN
139:217803 SiCN alloys obtained by remote plasma **chemical vapour deposition** from novel precursors.
Smirnova, T. P.; Badalian, A. M.; Yakovkina, L. V.; Kaichev, V. V.; Bukhtiyarov, V. I.; Shmakov, A. N.; Asanov, I. P.; Rachlin, V. I.; Fomina, A. N. (Nikolaev Institute of Inorganic Chemistry, SB RAS, Novosibirsk, 630090, Russia). Thin Solid Films, 429(1-2), 144-151 (English) 2003. CODEN: THSFAP. ISSN: 0040-6090. Publisher: Elsevier Science B.V..
AB Silicon carbonitride films were synthesized in a remote plasma **chem. vapor deposition** process using novel single-source precursors (CH3)2HSiNHN(CH3)2 and (CH3)2Si[NHN(CH3)2]2, which are silyl derivs. of 1,1-dimethylhydrazine. The films were characterized by XPS, FTIR spectroscopy and UV-Vis absorption spectroscopy. The microstructure of the films was examd. by SEM and diffraction of synchrotron radiation methods. XPS and FTIR spectroscopic studies showed the Si-C and Si-N to be the basic bonds for the films deposited in the system with excited hydrogen, whereas the C-N and Si-N bonds are mainly peculiar to the films synthesized in the system with excited helium. The films were found to be predominately amorphous with a no. of crystallites embedded in an unstructured matrix. The cryst. phase can be indexed in tetragonal cell with lattice parameters

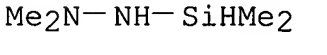
a=9.6 .ANG. and c=6.4 .ANG.. Appearance of the crystals, their dimensions and crystal forms did not depend on the substrate temp. We hypothesize that the crystn. occurs either in the gas phase during deposition or in the solid as a result of the increase in mech. stress with increasing film thickness. The FTIR and XPS data demonstrate the chem. bonding and the at. local order in the amorphous matrix to be much more complicated than those of Si3N4-SiC or Si3N4-C3N4 mixts. This novel material has an optical band gap varying within the energy range from 2.0 to 4.7 eV. The films obtained were highly resistant to thermal degrdn.

IT **6026-17-1 318981-38-3**
(precursors; remote plasma **CVD** and properties of silicon carbonitride films from silyl derivs. of methylhydrazine)

RN 6026-17-1 HCA
CN Hydrazine, 1,1'-(dimethylsilylene)bis[2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 318981-38-3 HCA
CN Hydrazine, 2-(dimethylsilyl)-1,1-dimethyl- (9CI) (CA INDEX NAME)



CC 57-2 (Ceramics)
ST silicon carbonitride film remote plasma **CVD** property; methylhydrazine silyl deriv precursor silicon carbonitride film **CVD**
IT Band gap
(optical; remote plasma **CVD** and properties of silicon carbonitride films from silyl derivs. of methylhydrazine)
IT Vapor deposition process
(plasma, remote plasma; remote plasma **CVD** and properties of silicon carbonitride films from silyl derivs. of methylhydrazine)
IT Thermal stability
(remote plasma **CVD** and properties of silicon carbonitride films from silyl derivs. of methylhydrazine)
IT 64477-28-7P, Silicon carbide nitride
(films; remote plasma **CVD** and properties of silicon carbonitride films from silyl derivs. of methylhydrazine)
IT **6026-17-1** 30260-66-3D, Hydrazine, dimethyl-, silyl derivs.

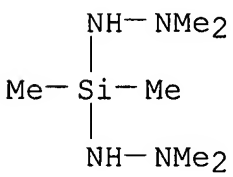
318981-38-3
(precursors; remote plasma **CVD** and properties of silicon carbonitride films from silyl derivs. of methylhydrazine)

L41 ANSWER 13 OF 28 HCA COPYRIGHT 2005 ACS on STN
138:393203 Composition and Structure of Films Deposited from Silyl Derivatives of Asymmetrical Dimethylhydrazine. Smirnova, T. P.; Badalyan, A. M.; Yakovkina, L. V.; Shmakov, A. N.; Asanov, I. P.; Borisov, V. O. (Siberian Division, Institute of Inorganic Chemistry, Russian Academy of Sciences, Novosibirsk, 630090, Russia). Inorganic Materials (Translation of Neorganicheskie Materialy), 39(2), 117-122 (English) 2003. CODEN: INOMAF. ISSN: 0020-1685. Publisher: MAIK Nauka/Interperiodica Publishing.

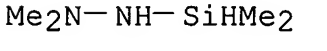
AB Si-N-C films were produced by remote-plasma **CVD** using silyl derivs. of asym. dimethylhydrazine as precursors and were characterized by optical spectroscopy, XPS, SEM, and synchrotron x-ray diffraction. Si-N and Si-C bonds prevail in the films deposited using excited H, while the structure of the films deposited using excited He is dominated by Si-N and C-N bonds. The films contain both amorphous and cryst. Si carbonitride. The cryst. phase can be indexed in a tetragonal cell with lattice parameters a 9.6 and c 6.4 .ANG.. The formation of the cryst. phase and the shape of the crystallites are not correlated with the deposition temp., which gives grounds to believe that the crystn. process may occur in the gas phase or on the film surface as a result of the increase in mech. stress with increasing film thickness.

IT **6026-17-1 318981-38-3**
(compn. and structure of silicon carbonitride films deposited by remote-plasma **CVD** using silyl derivs. of asym. dimethylhydrazine)

RN 6026-17-1 HCA
CN Hydrazine, 1,1'-(dimethylsilylene)bis[2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 318981-38-3 HCA
CN Hydrazine, 2-(dimethylsilyl)-1,1-dimethyl- (9CI) (CA INDEX NAME)



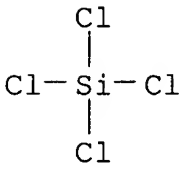
CC 75-1 (Crystallography and Liquid Crystals)

IT Composition
Crystallization
Stress, mechanical
Surface structure
(compn. and structure of silicon carbonitride films deposited by remote-plasma **CVD** using silyl derivs. of asym. dimethylhydrazine)
IT Vapor deposition process
(plasma; compn. and structure of silicon carbonitride films deposited by remote-plasma **CVD** using silyl derivs. of asym. dimethylhydrazine)
IT 64477-28-7, Silicon carbide nitride
(compn. and structure of silicon carbonitride films deposited by remote-plasma **CVD** using silyl derivs. of asym. dimethylhydrazine)
IT **6026-17-1 318981-38-3**
(compn. and structure of silicon carbonitride films deposited by remote-plasma **CVD** using silyl derivs. of asym. dimethylhydrazine)

L41 ANSWER 14 OF 28 HCA COPYRIGHT 2005 ACS on STN
138:296161 Atomic layer deposition of capacitor dielectric. Zheng, Lingyi A.; Ping, Er-Xuan; Breiner, Lyle; Doan, Trung T. (Micron Technology, Inc., USA). U.S. US 6551893 B1 20030422, 12 pp. (English). CODEN: USXXAM. APPLICATION: US 2001-994547 20011127.
AB The present invention relates to memory cell capacitor structures and, more particularly, to a fabrication process where a capacitor dielec. is formed by at. layer deposition. A capacitor structure is formed over a semiconductor substrate by at. layer deposition to achieve uniform thickness in memory cell dielec. layers, particularly where the dielec. layer is formed in a container-type capacitor structure. In accordance with several embodiments of the present invention, a process for forming a capacitor structure over a semiconductor substrate is provided. Other embodiments of the present invention relate to processes for forming memory cell capacitor structures, memory cells, and memory cell arrays. Capacitor structures, memory cells, and memory cell arrays are also provided.
IT **302-01-2, Hydrazine**, reactions **10026-04-7**
, Tetrachlorosilane
(vapor deposition precursor; at. layer deposition of capacitor dielec.)
RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)

H_2N-NH_2

RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



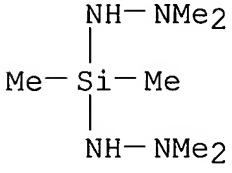
IC ICM H01L021-20
INCL 438387000; 438386000; 438765000; 438769000; 438778000; 438763000; 438396000
CC 76-10 (Electric Phenomena)
IT **Vapor deposition** process
(**chem.**, at. layer; at. layer deposition of capacitor dielec.)
IT **302-01-2**, **Hydrazine**, reactions 1590-87-0, Disilane 4109-96-0, Dichlorosilane 7664-41-7, Ammonia, reactions 7803-62-5, Silane, reactions 10025-78-2, Trichlorosilane **10026-04-7**, Tetrachlorosilane 13465-77-5, Hexachlorodisilane
(vapor deposition precursor; at. layer deposition of capacitor dielec.)

L41 ANSWER 15 OF 28 HCA COPYRIGHT 2005 ACS on STN
138:291314 Chemical Composition and Structure of Thin Films Produced by **Chemical Vapor Deposition.** Badalyan, A. M.; Belyi, V. I.; Gel'fond, N. V.; Igumenov, I. K.; Kosinova, M. L.; Morozova, N. B.; Rastorguev, A. A.; Rumyantsev, Yu. M.; Smirnova, T. P.; Fainer, N. I.; Yakovkina, L. V. (Siberian Branch, Russian Academy of Sciences, Institute of Inorganic Chemistry, Novosibirsk, Russia). Journal of Structural Chemistry (Translation of Zhurnal Strukturnoi Khimii), 43(4), 556-580 (English) 2002. CODEN: JSTCAM. ISSN: 0022-4766. Publisher: Kluwer Academic/Consultants Bureau.
AB This paper reports results from studies of the chem. compn. and structure of semiconducting, dielec., and metallic films produced from mol. precursors by the **chem. vapor deposition** method. A study was made of films of zinc sulfides, mixed copper, cadmium, and zinc sulfides, boron nitride, carbonitride, silicon carbonitride, and iridium films. It is shown that the use of metal compds. with different ligands (zinc and manganese) enables prodn. of zinc sulfide films in which manganese ions are uniformly incorporated into the zinc sulfide crystal lattice to substitute zinc at the lattice sites. For the films of simple and mixed cadmium, copper, and zinc sulfides, the film structure depends on the type of substrate. The thin layers of mixed cadmium and zinc sulfides are a substitution soln. with a

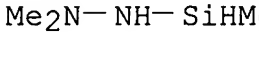
hexagonal structure. The thin layers of boron nitride produced from borazine exhibit a nanocryst. structure and are a mixt. of cubic and hexagonal phases. Composite layers were produced from alkylamine boranes and their mixts. with ammonia. Depending on synthesis conditions, the layers are mixts. of hexagonal boron nitride, carbide, and carbonitride or pure boron nitride. Using silyl derivs. of asym. dimethylhydrazine contg. Si-N and C-N bonds in the starting mol., we produced silicon carbonitride films whose crystal habit belongs to a tetragonal structure with lattice parameters a = 9.6 .ANG. and c = 6.4 .ANG.. The iridium films obtained by thermal decompn. of iridium tris-acetylacetonate(III) on quartz substrates in the presence of hydrogen have a polycryst. structure with crystallite sizes 50-500 .ANG.. A method for detg. grain-size compn. was proposed, and grain shapes for the iridium films were analyzed. The influence of substrate temp. on the internal microstructure and growth of the iridium films is demonstrated. At the iridium-substrate interface, a transition layer forms, whose compn. depends on the substrate material and deposition conditions.

IT **6026-17-1 318981-38-3**
(precursor; chem. compn. and structure of semiconducting, dielec., and metallic thin films prepd. by **CVD** from mol. precursors)

RN 6026-17-1 HCA
CN Hydrazine, 1,1'-(dimethylsilylene)bis[2,2-dimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 318981-38-3 HCA
CN Hydrazine, 2-(dimethylsilyl)-1,1-dimethyl- (9CI) (CA INDEX NAME)



CC 57-2 (Ceramics)
Section cross-reference(s): 56, 75, 76

ST semiconducting film **CVD** compn structure mol precursor; metallic film **CVD** compn structure mol precursor; dielec film **CVD** compn structure mol precursor; silicon carbide nitride film **CVD** compn structure mol precursor; boron carbide nitride film **CVD** compn structure mol precursor; manganese zinc sulfide film **CVD** compn structure mol precursor; cadmium sulfide film **CVD** compn structure mol

precursor; copper sulfide film **CVD** compn structure mol precursor; cadmium zinc sulfide film **CVD** compn structure mol precursor; iridium film **CVD** compn structure mol precursor

IT Crystal structure
Dielectric films
(chem. compn. and structure of semiconducting, dielec., and metallic thin films prepd. by **CVD** from mol. precursors)

IT **Vapor deposition** process
(**chem.**, mol. precursor; chem. compn. and structure of semiconducting, dielec., and metallic thin films prepd. by **CVD** from mol. precursors)

IT Semiconductor materials
(films; chem. compn. and structure of semiconducting, dielec., and metallic thin films prepd. by **CVD** from mol. precursors)

IT 1306-23-6P, Cadmium sulfide (CdS), preparation 7439-88-5P, Iridium, preparation 10043-11-5P, Boron nitride (BN), preparation 12442-27-2P, Cadmium zinc sulfide ((Cd,Zn)S) 12656-55-2P, Boron carbide nitride 22205-45-4P, Copper sulfide cu2s 37382-21-1P, Cadmium copper sulfide 64477-28-7P, Silicon carbide nitride 124366-20-7P, Manganese zinc sulfide
(films; chem. compn. and structure of semiconducting, dielec., and metallic thin films prepd. by **CVD** from mol. precursors)

IT 66-71-7, 1,10-Phenanthroline 1722-26-5, Triethylamine borane **6026-17-1** 6569-51-3, Borazine 7681-65-4, Copper iodide (CuI) 13681-87-3, Bis-(diethyldithiocarbamato)copper 14239-68-0, Bis-(diethyldithiocarbamato)cadmium 14324-55-1, Bis(diethyldithiocarbamato)zinc 15635-87-7, Iridium acetylacetonate 30260-66-3, Hydrazine, dimethyl- 33751-76-7 37275-48-2, Bipyridine 60369-41-7 156916-06-2 **318981-38-3** 386214-13-7
(precursor; chem. compn. and structure of semiconducting, dielec., and metallic thin films prepd. by **CVD** from mol. precursors)

IT 1303-00-0, Gallium arsenide gaas, uses 1317-82-4, Leucosapphire 1344-28-1, Alumina, uses 7440-21-3, Silicon, uses 7440-32-6, Titanium, uses 7440-50-8, Copper, uses 7440-56-4, Germanium, uses 7631-86-9, Silica, uses 14808-60-7, Quartz, uses 22398-80-7, Indium phosphide inp, uses 60676-86-0, Vitreous silica
(substrates; chem. compn. and structure of semiconducting, dielec., and metallic thin films prepd. by **CVD** from mol. precursors)

L41 ANSWER 16 OF 28 HCA COPYRIGHT 2005 ACS on STN
138:264320 Method for low-temperature film formation using cyclic layer deposition. Luo, Lee; Ahn, Sang Hoon; Chen, Aihua; Iyer, Ramaseshan

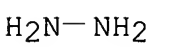
Suryanarayanan; Wang, Shulin; Singh, Thakur Randhir P. (USA). U.S. Pat. Appl. Publ. US 2003059535 A1 20030327, 16 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-964075 20010925.

AB The invention relates to a method for low-temp. film formation using cyclic layer deposition (CLD) in a cold wall single-wafer process chamber. The method consists of steps of (i) flowing a reactive gas over the top surface of the wafer in a cold wall single-wafer process chamber to form a half-layer of the film on the wafer; (ii) stopping the flow of the reactive gas; (iii) removing residual reactive gas from the process chamber; (iv) flowing a second reactive gas over the first half-layer to form a second half-layer of the film, where deposition of the second half-layer is not self-limiting; (v) controlling the thickness of the second half-layer by regulating process parameters within the process chamber; (vi) stopping the flow of the second reactive gas; and (vii) removing residual second reactive gas from the process chamber.

IT **302-01-2, Hydrazine**, reactions **10026-04-7**, Tetrachlorosilane
(vapor deposition precursor; method for low-temp. film formation using cyclic layer deposition)

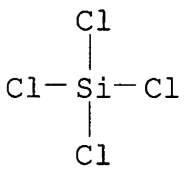
RN 302-01-2 HCA

CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 10026-04-7 HCA

CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



IC ICM B32B009-00
ICS C23C016-00

INCL 427255280; 428446000; 428698000; 427569000

CC 76-10 (Electric Phenomena)
Section cross-reference(s): 75

IT **Vapor deposition** process
(**chem.**; method for low-temp. film formation using cyclic layer deposition)

IT 78-10-4, Tetraethylorthosilicate **302-01-2**, **Hydrazine**, reactions 1590-87-0, Disilane 4109-96-0, Dichlorosilane 7664-41-7, Ammonia, reactions 7727-37-9,

Nitrogen, reactions 7732-18-5, Water, reactions 7782-44-7, Oxygen, reactions 7783-54-2, Nitrogen trifluoride 7803-62-5, Silane, reactions 10024-97-2, Nitrous oxide, reactions **10026-04-7**, Tetrachlorosilane 10028-15-6, Ozone, reactions 13465-77-5, Hexachlorodisilane 13465-84-4, Tetraiodosilane 186598-40-3, Bis(tert-butylamino)silane
(vapor deposition precursor; method for low-temp. film formation using cyclic layer deposition)

L41 ANSWER 17 OF 28 HCA COPYRIGHT 2005 ACS on STN
136:23976 Silicon carbon nitride films as new materials obtained by plasma **chemical vapor deposition** from novel precursor. Smirnova, Tamara P.; Shmakov, Aleksander N.; Badalian, Aram M.; Kaichev, Vasiliy V.; Bukhtiyarov, Valery I.; Rachlin, Vladimer I.; Fomina, Anna N. (Institute of Inorganic Chemistry, SB RAS, Russia). Proceedings of SPIE-The International Society for Optical Engineering, 4467(Complex Mediums II: Beyond Linear Isotropic Dielectrics), 366-376 (English) 2001. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB Silicon carbonitride films were synthesized by RP **CVD** process using the novel single-source precursor that is deriv. of 1,1-dimethylhydrazine, (CH3)2HSiNHN(CH3)2. The films were characterized by XPS, FTIR and UV spectroscopy. The microstructure of the films was examd. by SEM and diffraction of synchrotron radiation (DSR) methods. XPS and FTIR spectroscopy studies showed that the Si-C and Si-N are the main bonds in the deposited films. Concerning the C-N bonds, the results are less obvious: they are either negligible or not present at all. The films were found to be predominately amorphous with a no. of crystallites within the unstructured matrix. The crystals appearance, their dimensions and crystal form did not depend on substrate temp. We hypothesized that crystn. could happen in the gas phase during deposition or nanocrystals were formed by the strain induced after a certain thickness of the amorphous film. The crystals were assigned to the structure closed to .alpha.-Si3N4 phase. According to FTIR and XPS data it is clear that the chem. bonding and the at. local order in the amorphous matrix are much more complicated than those of Si3N4-SiC mixts. Tetrahedral configurations of silicon carbide and silicon nitride units with mixed C/N environment are hypothetically formed. The films are highly resistant to thermal degrdn. This new material has a band gap that was variable from 2.0-4.7 eV.

IT **318981-38-3**
(precursor; prepn. of silicon carbonitride films by plasma **CVD** using)

RN 318981-38-3 HCA

CN Hydrazine, 2-(dimethylsilyl)-1,1-dimethyl- (9CI) (CA INDEX NAME)

$Me_2N-NH-SiHMe_2$

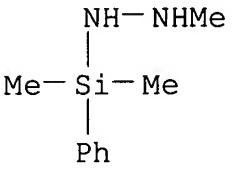
CC 57-2 (Ceramics)
Section cross-reference(s): 75
ST silicon carbonitride ceramic film plasma **CVD** methylsilyldimethylhydrazine precursor
IT Films
(ceramic; prepn. of silicon carbonitride films by plasma **CVD**)
IT Ceramics
(films; prepn. of silicon carbonitride films by plasma **CVD**)
IT Bond
(in silicon carbonitride films prepd. by plasma **CVD**)
IT Band gap
Microstructure
Thermal stability
(of silicon carbonitride films prepd. by plasma **CVD**)
IT Vapor deposition process
(plasma; prepn. of silicon carbonitride films by plasma **CVD**)
IT **318981-38-3**
(precursor; prepn. of silicon carbonitride films by plasma **CVD** using)
IT 64477-28-7P, Silicon carbonitride
(prepn. of silicon carbonitride films by plasma **CVD**)

L41 ANSWER 18 OF 28 HCA COPYRIGHT 2005 ACS on STN
135:27161 Method of improving moisture resistance of low dielectric constant films. Yau, Wai-fan; Cheung, David; Chopra, Nasreen Gazala; Lu, Yung-cheng; Mandal, Robert; Moghadam, Farhad (Applied Materials, Inc., USA). U.S. US 6245690 B1 20010612, 22 pp. (English). CODEN: USXXAM. APPLICATION: US 1998-187460 19981104.
AB A method and app. for depositing a low dielec. const. film includes depositing a Si oxide based film, preferably by reaction of an organosilicon compd. and an oxidizing gas at a low RF power level from .apprx.10 W to .apprx.500 W, exposing the Si oxide based film to H2O or a hydrophobic-imparting surfactant such as hexamethyldisilazane, and curing the Si oxide based film at an elevated temp. Dissocn. of the oxidizing gas can be increased in a sep. microwave chamber to assist in controlling the C content of the deposited film. The moisture resistance of the Si oxide based films is enhanced.
IT **692-56-8 343261-10-9**
(method for depositing low dielec. const. film including step of exposing Si oxide based film to hydrophobic-imparting surfactant)
RN 692-56-8 HCA

CN Hydrazine, 1,2-bis(trimethylsilyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

$Me_3Si-NH-NH-SiMe_3$

RN 343261-10-9 HCA
CN Hydrazine, 1-(dimethylphenylsilyl)-2-methyl- (9CI) (CA INDEX NAME)



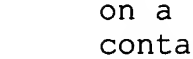
IC ICM C23C016-40
INCL 438780000
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
IT **Vapor deposition** process
(**chem.**; method of improving moisture resistance of low dielec. const. films deposited on substrate)
IT 75-77-4, Trimethylchlorosilane, processes **692-56-8** 996-50-9, Trimethylsilyldiethylamine 999-97-3, Hexamethyldisilazane 20180-31-8 116228-47-8 343261-09-6 **343261-10-9** 343261-11-0 343261-12-1
(method for depositing low dielec. const. film including step of exposing Si oxide based film to hydrophobic-imparting surfactant)

L41 ANSWER 19 OF 28 HCA COPYRIGHT 2005 ACS on STN
135:12384 **Chemical vapor deposition** method with liquid feed. Westmoreland, Donald L.; Sandhu, Gurtej S. (USA). U.S. Pat. Appl. Publ. US 20010001949 A1 20010531, 5 pp., Cont. of U.S. Ser. No. 909,695, abandoned. (English). CODEN: USXXCO. APPLICATION: US 1998-97489 19980615. PRIORITY: US 1997-909695 19970812.
AB The invention is a method directed to the use of a nonvolatile precursor, either a solid precursor or a liq. precursor, suitable for **CVD**, including liq. source **CVD** (LSCVD), of a semiconductor film. Using the method of the invention the nonvolatile precursor is dissolved in a solvent. The choice of solvent is typically an inorg. compd. that has a moderate to high vapor pressure at room temp. and that can be liquefied by a combination of pressure and cooling. The soln. thus formed is then transported at an elevated pressure and/or a reduced temp. to the **CVD** chamber. In **CVD** the soln. evaps. at a higher temp. and a lower pressure upon entry to the **CVD** chamber,

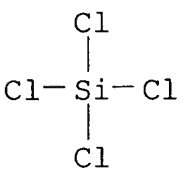
and the nonvolatile precursor, in its gaseous state, along with a gas reactant, produces a product which is deposited as a thin film on a semiconductor wafer. In LSCVD the liq. enters the chamber, contacts the wafer, evaps., produces a product which is deposited as a thin film on the wafer surface.

IT **302-01-2, Hydrazine**, uses **10026-04-7**, Silicon chloride (SiCl4)
(**CVD** method for depositing film on semiconductor wafer with liq. feed comprising solubilizing nonvolatile precursor in)

RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



IC C23C016-06; C23C016-00
INCL 118715000
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
ST **CVD** liq feed nonvolatile precursor
IT Semiconductor device fabrication
Semiconductor films
(**CVD** method for depositing film on semiconductor wafer with liq. feed)
IT **Vapor deposition** process
(**chem.**; **CVD** method for depositing film on semiconductor wafer with liq. feed)
IT 1333-74-0, Hydrogen, reactions 7803-62-5, Silane, reactions
(**CVD** method for depositing film on semiconductor wafer with liq. feed comprising creating reaction between nonvolatile precursor and reactant vapor of)
IT 1271-19-8, Biscyclopentadienyltitanium dichloride 1298-37-9, Bis(cyclopentadienyl) titanium diazide 10026-11-6, Zirconium chloride (ZrCl4) 12086-52-1, Bis(cyclopentadienyl)bis(dimethylamido)titanium 33194-84-2, Cyclopentadienyltris(diethylamido)titanium 179949-49-6
(**CVD** method for depositing film on semiconductor wafer with liq. feed comprising creating reaction between reactant

vapor and nonvolatile precursor of)

IT 56-23-5, Carbon tetrachloride, uses 75-63-8, Carbon bromide fluoride (CBrF3) 75-69-4 75-71-8 75-72-9 **302-01-2**, **Hydrazine**, uses 557-20-0, Diethylzinc 4109-96-0, Silicon chloride hydride (SiCl2H2) 6569-51-3, Borazine 7550-45-0, Titanium chloride (TiCl4), uses 7637-07-2, Boron fluoride (BF3), uses 7721-01-9, Tantalum chloride (TaCl5) 7783-06-4, Hydrogen sulfide (H2S), uses 7783-61-1, Silicon fluoride (SiF4) 7783-82-6, Tungsten fluoride (WF6) 7784-42-1, Arsine 7803-51-2, Phosphine **10026-04-7**, Silicon chloride (SiCl4) 10102-43-9, Nitrogen oxide (NO), uses 10294-34-5, Boron chloride (BCl3) 13827-32-2, Sulfur oxide (SO) 19918-23-1, Silicon fluoride (SiF6) 57034-81-8, Xenon fluoride
(**CVD** method for depositing film on semiconductor wafer with liq. feed comprising solubilizing nonvolatile precursor in)

IT 7664-41-7, Ammonia, uses
(**CVD** method for depositing film on semiconductor wafer with liq. feed comprising solubilizing nonvolatile precursor in ammonia and creating reaction between nonvolatile precursor and reactant vapor of)

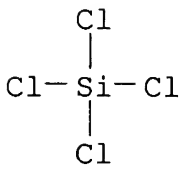
L41 ANSWER 20 OF 28 HCA COPYRIGHT 2005 ACS on STN
134:374852 Apparatus for forming TiSiN thin films in manufacture of semiconductor devices. Matsuse, Kimihiro (Tokyo Electron, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001144032 A2 20010525, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-326611 19991117.

AB The TiSiN films are formed by thermal **CVD** using Ti-contg. gases such as TiCl4, tetraxy dimethylamino-titanium and tetraxy diethylamino-titanium, Si-contg. gases such as SiH2Cl2, SiHCl3, SiCl4, Si2H4 and Si2H6, and N-contg. gases such as NH3 and monomethyl **hydrazine**.

IT **10026-04-7**, Silicon chloride (SiCl4)
(app. for forming TiSiN thin films in manuf. of semiconductor devices)

RN 10026-04-7 HCA

CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



IC ICM H01L021-285
ICS H01L021-285; C23C016-34; H01L021-768; H01L027-04; H01L021-822; H01L027-108; H01L021-8242; H01L029-78

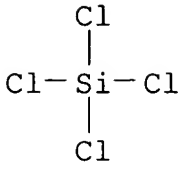
CC 76-3 (Electric Phenomena)

Section cross-reference(s): 75
ST titanium nitride silicide **CVD** semiconductor device
IT 60-34-4, Monomethyl **hydrazine** 1590-87-0, Silicon hydride (Si2H6) 3275-24-9, TDMAT 4109-96-0, Silicon chloride hydride (SiCl2H2) 4419-47-0, TDEAT 7550-45-0, Titanium chloride (TiCl4), reactions 7664-41-7, Ammonia, reactions 10025-78-2, Silane, trichloro- **10026-04-7**, Silicon chloride (SiCl4) 15435-77-5, Silicon hydride (Si2H4)
(app. for forming TiSiN thin films in manuf. of semiconductor devices)

L41 ANSWER 21 OF 28 HCA COPYRIGHT 2005 ACS on STN
134:35898 Method for modifying the surface of a substrate on which an insulating film is to be formed. Ikakura, Hiroshi; Nishikawa, Shunji; Tokumasu, Noboru; Azumi, Takayoshi (Canon Sales Co., Inc., Japan; Semiconductor Process Laboratory Co., Ltd.). Eur. Pat. Appl. EP 1058301 A1 20001206, 26 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 1999-123923 19991202. PRIORITY: JP 1999-158712 19990604.
AB Disclosed is a method for modifying a film-forming surface of a substrate, which is capable removing a base surface dependency in forming a film on the film-forming surface (12a) of the substrate (102) prior to formation of a film (13) by a thermal **CVD** method using a reactant gas contg. an ozone-contg. gas contg. ozone (O3) in O (O2) and Tetra-Ethyl-Ortho-Silicate. The method comprises the step of modifying the film-forming surface (12a) of the substrate (102) by allowing any one of NH3, **hydrazine**, an amine, gases thereof and aq. solns. thereof to contact with the surface (12a) of the substrate (102) before forming an insulating film (13) on the surface (12a) of the substrate (102).
IT **302-01-2**, **Hydrazine**, processes
(in method for modifying surface of substrate on which insulating film is to be formed)
RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)

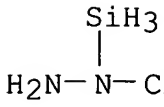
H_2N-NH_2

IT **10026-04-7**, Silicon tetrachloride
(in method for modifying surface of substrate on which insulating film is to be formed)
RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



IC ICM H01L021-316
ICS H01L021-306; C23C016-40; C23C016-02
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75
ST **CVD** silica ammonia **hydrazine** amine; dielec film
CVD
IT **Vapor deposition** process
(**chem.**; method for modifying surface of substrate on which insulating film is to be formed)
IT 78-10-4, TEOS **302-01-2**, **Hydrazine**, processes
1336-21-6, Ammonium hydroxide 7664-41-7, Ammonia, processes
7782-44-7, Oxygen, processes 10028-15-6, Ozone, processes
(in method for modifying surface of substrate on which insulating film is to be formed)
IT **10026-04-7**, Silicon tetrachloride 27598-85-2, Aminophenol
30179-49-8, Aminobenzenesulfonic acid
(in method for modifying surface of substrate on which insulating film is to be formed)

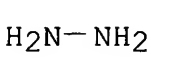
L41 ANSWER 22 OF 28 HCA COPYRIGHT 2005 ACS on STN
132:229833 Method and apparatus for **CVD** of silicon nitride, and apparatus for removing ammonium halide. Sato, Yusuke; Kataoka, Takashi; Tamaoki, Naoki; Ohmine, Toshimitsu (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2000080476 A2 20000321, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-179218 19990625. PRIORITY: JP 1998-180436 19980626.
AB A method for **CVD** of a silicon nitride film involves using SiH4-x(NH2)x (x.gtoreq.2), or SiH2NH, or Si(NH)2, or (SiH2NH)x, or NH2(SiH2NH)xSiH2NH2 (x>1), or SiH4-x(NHR)x (x.gtoreq.2, R=H, F, F-substitutable C1-3 hydrocarbon group), or SiH4-x-y(NH2)x(NHR)y (x+y.ltoreq.4, x,y.gtoreq.1), or SixNyHz (y.gtoreq.2), or SixNyHzFu. Addnl., NH3, hydrazine (or its deriv.), or HCl may be used. An app. for carrying out the above method is also described. An app. for removing an ammonium halide from the above app. is also described. The method and app. are useful for semiconductor device fabrication.
IT **208238-68-0**
(method and app. for **CVD** of silicon nitride, and app. for removing ammonium halide)
RN 208238-68-0 HCA
CN Hydrazine, 1-methyl-1-silyl- (9CI) (CA INDEX NAME)



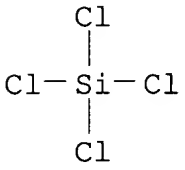
IC ICM C23C016-34
ICS C01B021-068; C23C016-44; H01L021-318
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
ST silicon nitride **CVD** app semiconductor device fabrication; ammonium halide removal silicon nitride **CVD** app
IT **Vapor deposition** process
(**chem.**; method and app. for **CVD** of silicon nitride, and app. for removing ammonium halide)
IT Semiconductor device fabrication
Vapor deposition apparatus
(method and app. for **CVD** of silicon nitride, and app. for removing ammonium halide)
IT Ammonium halides
(method and app. for **CVD** of silicon nitride, and app. for removing ammonium halide)
IT 60-34-4, Methylhydrazine 302-01-2, Hydrazine, uses 1590-87-0, Disilane 4109-96-0, Dichlorosilane 7647-01-0, Hydrogen chloride, uses 7664-41-7, Ammonia, uses 13598-78-2, Silanamine 14044-99-6, Silanediamine 137479-35-7 **208238-68-0**
(method and app. for **CVD** of silicon nitride, and app. for removing ammonium halide)
IT 12033-89-5, Silicon nitride, processes
(method and app. for **CVD** of silicon nitride, and app. for removing ammonium halide)
IT 12125-02-9, Ammonium chloride, processes
(method and app. for **CVD** of silicon nitride, and app. for removing ammonium halide)

L41 ANSWER 23 OF 28 HCA COPYRIGHT 2005 ACS on STN
132:215765 Manufacture of semiconductor devices including formation of capacitors. Saita, Shigehiko; Sato, Isao; Tsunashima, Yoshitaka (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2000082781 A2 20000321, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-178462 19990624. PRIORITY: JP 1998-182427 19980629.
AB Oxide layer formed on a semiconductor substrate is removed, impurity is added to the semiconductor surface for formation of a 1st capacitor electrode, formation of a capacitor insulator on the electrode without generation of oxide layer, and formation of a 2nd capacitor electrode thereon. The capacitor insulator may be Si nitride formed by **CVD**. Increase of leakage current is prevented in the structure. The devices are esp. useful as

memories.
IT **302-01-2, Hydrazine**, processes **10026-04-7**
, Silicon tetrachloride
(manuf. of semiconductor memory devices by formation of silicon nitride dielec. layers by **CVD**)
RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



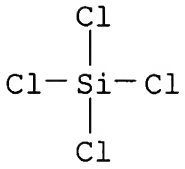
IC ICM H01L027-04
ICS H01L021-822; H01L021-318
CC 76-3 (Electric Phenomena)
ST semiconductor capacitor memory device fabrication; silicon nitride **CVD** semiconductor capacitor memory
IT Memory devices
(DRAM (dynamic random access), semiconductor; manuf. of semiconductor memory devices by formation of silicon nitride dielec. layers by **CVD**)
IT Semiconductor memory devices
(RAM (random access), DRAM; manuf. of semiconductor memory devices by formation of silicon nitride dielec. layers by **CVD**)
IT **Vapor deposition** process
(**chem.**; manuf. of semiconductor memory devices by formation of silicon nitride dielec. layers by **CVD**)
IT Capacitors
Semiconductor device fabrication
(manuf. of semiconductor memory devices by formation of silicon nitride dielec. layers by **CVD**)
IT 12033-89-5P, Silicon nitride, uses
(manuf. of semiconductor memory devices by formation of silicon nitride dielec. layers by **CVD**)
IT 60-34-4, Monomethylhydrazine **302-01-2, Hydrazine**
, processes 7664-41-7, Ammonia, processes 7783-54-2, Trifluoroammonia **10026-04-7**, Silicon tetrachloride 13569-32-9, Silicon dichloride 19165-34-5, Silicon trichloride

30260-66-3, Dimethylhydrazine
(manuf. of semiconductor memory devices by formation of silicon nitride dielec. layers by **CVD**)
IT 7440-21-3, Silicon, processes
(substrate; manuf. of semiconductor memory devices by formation of silicon nitride dielec. layers by **CVD**)

L41 ANSWER 24 OF 28 HCA COPYRIGHT 2005 ACS on STN
125:261954 **Chemical vapor deposition**
utilizing a precursor. Westmoreland, Donald L.; Sandhu, Gurtej S. (Micron Technology, Inc., USA). PCT Int. Appl. WO 9627032 A1 19960906, 15 pp. DESIGNATED STATES: W: JP, KR; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1996-US1773 19960209. PRIORITY: US 1995-395942 19950228.
AB A method is given for the use of a precursor, either a solid precursor or a liq. precursor, suitable for **CVD**, including liq. source **CVD** (LSCVD), of a semiconductor film. Using the method the precursor is dissolved in a solvent. The choice of solvent is typically an inorg. compd. that has a moderate to high vapor pressure at room temp. and that can be liquefied by a combination of pressure and cooling. The soln. thus formed is then transported at an elevated pressure and/or a reduced temp. of the **CVD** chamber. In **CVD** the soln. evaps. at a higher temp. and a lower pressure upon entry to the **CVD** chamber, and the precursor, in its gaseous state, along with a gas reactant, produces a product which is deposited as a thin film on a semiconductor wafer. In LSCVD the liq. enters the chamber, contacts the wafer, evaps., produces a product which is deposited as a thin film on the wafer surface.
IT **302-01-2**, **Hydrazine**, uses
(inorg. solvent for dissolving precursor for **CVD**)
RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)

H_2N-NH_2

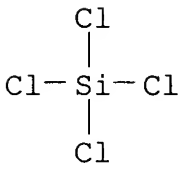
IT **10026-04-7**, Silicon tetrachloride
(zirconium tetrachloride precursor dissolved in silicon chloride for **CVD** of zirconium silicide)
RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



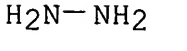
IC ICM C23C016-44
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
ST **CVD** method app precursor
IT Halogens
Pseudohalogens
(inorg. solvent for dissolving precursor for **CVD**)
IT Vapor deposition processes
(method and app. for **CVD** of film using precursor)
IT Semiconductor materials
(method and app. for **CVD** of semiconductor films using precursor)
IT 25583-20-4, Titanium nitride
(bis(cyclopentadienyl)titanium diazide solid precursor dissolved in liq. ammonia for **CVD** of)
IT 7664-41-7, Ammonia, processes
(bis(cyclopentadienyl)titanium diazide solid precursor dissolved in liq. ammonia for **CVD** of titanium nitride)
IT **302-01-2**, **Hydrazine**, uses 557-20-0, Diethylzinc 2551-62-4, Sulfur hexafluoride 4109-96-0, Dichlorosilane 6569-51-3, Borazine 7446-09-5, Sulfur dioxide, uses 7550-45-0, Titanium tetrachloride, uses 7637-07-2, Boron trifluoride, uses 7721-01-9, Tantalum pentachloride 7783-06-4, Hydrogen sulfide, uses 7783-61-1, Silicon tetrafluoride 7783-82-6, Tungsten hexafluoride 7784-42-1, Arsine 7803-51-2, Phosphine 10102-44-0, Nitrogen dioxide, uses 10294-34-5, Boron trichloride 57034-81-8, Xenon fluoride
(inorg. solvent for dissolving precursor for **CVD**)
IT 10026-11-6, Zirconium tetrachloride
(precursor dissolved in silicon chloride for **CVD** of zirconium silicide)
IT 1271-19-8, Dichlorodicyclopentadienyltitanium 12086-52-1, Bis(cyclopentadienyl)bis(dimethylamido)titanium 33194-84-2, Cyclopentadienyltris(diethylamido)titanium 58058-10-9, Tris(dimethylamido)indenyltitanium
(precursor for **CVD**)
IT 1298-37-9, Bis(cyclopentadienyl)titanium diazide
(solid precursor for **CVD** of titanium nitride)
IT 56-23-5, Carbon tetrachloride, uses 75-63-8, Bromotrifluoromethane 75-69-4, Trichlorofluoromethane 75-71-8, Dichlorodifluoromethane

75-72-9, Chlorotrifluoromethane
(solvent for dissolving precursor for **CVD**)
IT 37189-51-8, Zirconium silicide
(zirconium tetrachloride precursor dissolved in silicon chloride for **CVD** of)
IT **10026-04-7**, Silicon tetrachloride
(zirconium tetrachloride precursor dissolved in silicon chloride for **CVD** of zirconium silicide)

L41 ANSWER 25 OF 28 HCA COPYRIGHT 2005 ACS on STN
125:46887 Manufacture of MIS structure and apparatus for light-excited vapor deposition. Inoe, Naoki; Morikawa, Shigeru; Takagi, Takeshi (Osaka Gas Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 08088181 A2 19960402 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-221779 19940916.
AB The manuf. comprises these steps; (1) forming a polycryst.-Si semiconductor layer using a 1st source of silane/H2 or silane/disilane/H2 by irradiating the source with a light exciting it, (2) forming an insulating layer of SiO2 or SiN using a 2nd source of Si-source/N-source/O-source mixt. by irradiating a light exciting it, and repeating the step (1) and (2) to form the MIS structure. The app. comprises a vacuum chamber contg. a susceptor with heater for the substrate, a light source, the 1st and the 2nd source-supplying systems resp., a semiconductor layer-forming system, and an insulating layer-forming system. The manuf. and app. provides a MIS structure using economical sources and easily.
IT **10026-04-7**, Tetrachlorosilane
(**CVD** source; manuf. of MIS structure and app. for light-excited vapor deposition)
RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



IT **302-01-2**, **Hydrazine**, reactions
(nitrogen source; manuf. of MIS structure and app. for light-excited vapor deposition)
RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-205
ICS C30B025-02; C30B028-14; H01L021-31; H01L029-786; H01L021-336
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75
ST MIS light excited **CVD**; silane oxygen nitrogen source **CVD** photochem
IT 1333-74-0, Hydrogen, reactions
(**CVD** source component; manuf. of MIS structure and app. for light-excited vapor deposition)
IT 1590-87-0, Disilane 4109-96-0, Dichlorosilane 7783-26-8, Trisilane 7783-61-1, Tetrafluorosilane 7803-62-5, Silane, reactions 10025-78-2, Trichlorosilane **10026-04-7**, Tetrachlorosilane 10102-43-9, Nitrogen monoxide, reactions 10102-44-0, Nitrogen oxide (NO2), reactions 13465-71-9, Trifluorosilane 13465-78-6, Monochlorosilane 13537-33-2, Monofluorosilane 13824-36-7, Difluorosilane
(**CVD** source; manuf. of MIS structure and app. for light-excited vapor deposition)
IT **302-01-2**, **Hydrazine**, reactions 7664-41-7, Ammonia, reactions
(nitrogen source; manuf. of MIS structure and app. for light-excited vapor deposition)

L41 ANSWER 26 OF 28 HCA COPYRIGHT 2005 ACS on STN
107:165434 Formation of deposited film. Hirooka, Masaaki; Ishihara, Shunichi; Hanna, Junichi; Shimizu, Isamu (Canon K. K., Japan). U.S. US 4657777 A 19870414, 10 pp. Cont. of U.S. Ser. No. 682,367, abaondoned. (English). CODEN: USXXAM. APPLICATION: US 1986-821134 19860122. PRIORITY: US 1984-682367 19841217.
AB A method for forming a deposited film which is useful for a semiconductor device or an electrophotog. photoreceptor is comprised of providing a gaseous atm. contg. an active species obtained by decompn. of a Si halide represented by the formula SinX2n+2 (X = halogen; n .gtoreq. 1) and .gtoreq.1 compd. selected from acyclic silanes, alkylsilanes, halosilanes, and cyclic silanes and exciting discharging in the gaseous atm. and/or giving heat energy to the gaseous atm., thereby forming a Si-contg. deposited film. Thus, SiF4 gas was blown onto the red hot surface (1100.degree.) of Si to form SiF2 active species, mixed with SiH4, and exciting discharging carried out to deposit a Si photoconductive film on an Al drum which was preheated to 270.degree.. The resultant Al electrophotog. plate gave solid black toner images with very few defects.
IT **110730-87-5**
(reaction of, with silicon halide active species in **chem**. **vapor deposition** of halogenated amorphous silicon electrophotog. photoconductive films)
RN 110730-87-5 HCA
CN Trisilane, 3-chloro-1,1,1-trimethyl- (9CI) (CA INDEX NAME)

$Me_3Si-SiH_2-SiH_2-Cl$

IT **302-01-2**, uses and miscellaneous
(silicon halide active species reaction with silane deriv. in presence of, in **chem. vapor deposition** of halogenated amorphous silicon electrophotog. photoconductive films)
RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)

H_2N-NH_2

IC ICM B05D003-06
INCL 427039000
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **CVD** halogenated silicon photoconductor electrophotog
IT Semiconductor devices
(**chem. vapor deposition** of halogenated amorphous silicon films in fabrication of, by reaction of silicon halide active species with silane deriv.)
IT Electrophotographic photoconductors
(halogenated amorphous silicon, **chem. vapor deposition** of, by reaction of silicon halide active species with silane deriv.)
IT Hydrocarbons, uses and miscellaneous
(silicon halide active species reaction with silane deriv. in presence of, in **chem. vapor deposition** of halogenated amorphous silicon electrophotog. photoconductive films)
IT 7440-21-3D, halogenated
(electrophotog. photoconductive layers from amorphous, **chem. vapor deposition** of, by reaction of silicon halide reactive species with silane deriv.)
IT 13966-66-0, Silicon difluoride
(reaction of, from thermal decompn. of silicon halide, with silane deriv. in **chem. vapor deposition** of halogenated amorphous silicon electrophotog. photoconductive films)
IT 289-22-5 291-59-8 1111-74-6 1590-87-0 4109-96-0 7783-26-8 7783-29-1 7803-62-5, Silane, reactions 13465-78-6 13597-87-0 18365-32-7 18548-76-0 40633-37-2 99226-18-3 99226-25-2 99873-66-2 101673-04-5 101705-84-4 101753-14-4 101843-26-9 101843-29-2 110608-89-4 110608-90-7 110668-75-2 110668-76-3 110668-77-4 110668-78-5 110730-86-4 **110730-87-5**

110730-88-6 110730-89-7
(reaction of, with silicon halide active species in **chem**. **vapor deposition** of halogenated amorphous silicon electrophotog. photoconductive films)

IT 7783-61-1, Tetrafluorosilane
(silicon halide active species from thermal decompn. of, in **chem. vapor deposition** of halogenated amorphous silicon electrophotog. photoconductive films)

IT 74-84-0, Ethane, uses and miscellaneous 74-85-1, uses and miscellaneous 74-86-2, Acetylene, uses and miscellaneous 74-98-6, Propane, uses and miscellaneous 74-99-7, Methylacetylene 106-97-8, Butane, uses and miscellaneous 106-98-9, Butene-1, uses and miscellaneous 106-99-0, uses and miscellaneous 107-01-7 109-66-0, Pentane, uses and miscellaneous 115-07-1, Propylene, uses and miscellaneous 115-11-7, Isobutylene, uses and miscellaneous 124-38-9, Carbon dioxide, uses and miscellaneous **302-01-2**, uses and miscellaneous 630-08-0, Carbon monoxide, uses and miscellaneous 2377-80-2 7446-70-0, Aluminum trichloride, uses and miscellaneous 7637-07-2, Boron trifluoride, uses and miscellaneous 7647-19-0, Phosphorus pentafluoride 7664-41-7, Ammonia, uses and miscellaneous 7719-12-2, Phosphorus trichloride 7727-37-9, Nitrogen, uses and miscellaneous 7782-44-7, Oxygen, uses and miscellaneous 7782-79-8 7783-55-3, Phosphorus trifluoride 7783-70-2, Antimony pentafluoride 7784-34-1, Arsenic trichloride 7784-35-2, Arsenic trifluoride 7784-36-3, Arsenic pentafluoride 7784-42-1 7803-51-2 7803-52-3 10028-15-6, Ozone, uses and miscellaneous 10102-43-9, Nitrogen monoxide, uses and miscellaneous 10102-44-0, Nitrogen dioxide, uses and miscellaneous 10294-33-4, Boron tribromide 10294-34-5, Boron trichloride 12008-19-4 12164-94-2 13445-50-6 18283-93-7 18433-84-6 19287-45-7 19624-22-7 25377-72-4, Pentene
(silicon halide active species reaction with silane deriv. in presence of, in **chem. vapor deposition** of halogenated amorphous silicon electrophotog. photoconductive films)

IT 13465-77-5 13830-68-7 14188-35-3 14521-14-3 14521-15-4 18356-71-3 102050-96-4
(thermal decompn. of, silicon halide active species from, in **chem. vapor deposition** of halogenated amorphous silicon electrophotog. photoconductive films)

L41 ANSWER 27 OF 28 HCA COPYRIGHT 2005 ACS on STN
98:152783 Amorphous hydrogenated silicon electrophotographic photoconductor.. Shimizu, Isamu; Ogawa, Kyosuke; Inoue, Eiichi; Kanbe, Junichiro (Canon K. K. , Japan). Ger. Offen. DE 3209055 A1 19821021, 96 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1982-3209055 19820312. PRIORITY: JP 1981-36267 19810312; JP

1981-37441 19810316; JP 1981-37442 19810316; JP 1981-60154 19810421; JP 1981-60153 19810421; JP 1981-60155 19810421; JP 1981-60156 19810421; JP 1981-60157 19810421; JP 1981-60158 19810421.

AB Electrophotog. photoreceptors having as their photoconductor a layer of amorphous hydrogenated Si are prepd. by a **chem. vapor deposition** process involving .gtoreq.1 compd. contg. an O, N, or C atom and .gtoreq.2 compds. selected from compds. of the formula SinH2n+2 (n = a pos. whole no.) and SimHlXk (X = a halogen; m = a pos. whole no.; l = O or a pos. whole no.) where the compd. with the highest m or n (highest order) is contained in the mixt. at .gtoreq.1% based on the total amt. of the compd. with the lowest m or n.

IT **302-01-2**, uses and miscellaneous **10026-04-7**
(in amorphous hydrogenated silicon electrophotog. photoconductor prodn. by **chem. vapor deposition** process)

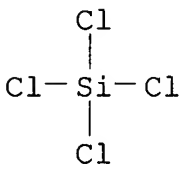
RN 302-01-2 HCA

CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)

H_2N-NH_2

RN 10026-04-7 HCA

CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



IC G03G005-082

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT Photography, electro-, photoconductors
Photography, electro-, plates
(amorphous hydrogenated silicon, **chem. vapor deposition** process in prodn. of)

IT Alkanes, uses and miscellaneous
Alkenes, uses and miscellaneous
Alkynes
(in amorphous hydrogenated silicon electrophotog. photoconductor prodn. by **chem. vapor deposition** process)

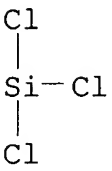
IT Alkanes, uses and miscellaneous
(halo, in amorphous hydrogenated silicon electrophotog. photoconductor prodn. by **chem. vapor**

deposition process)
IT 7440-21-3P, uses and miscellaneous
(amorphous hydrogenated, electrophotog. photoconductors from, **chem. vapor deposition** process in prodn. of)
IT 1333-74-0, uses and miscellaneous
(electrophotog. photoconductors from amorphous silicon contg., **chem. vapor deposition** process in prodn. of)
IT 7803-62-5D, alkyl derivs.
(in amorphous hydrogenated silica electrophotog. photoconductor prodn. by **chem. vapor deposition** process)
IT 74-82-8, uses and miscellaneous 74-85-1, uses and miscellaneous 74-98-6, uses and miscellaneous 124-38-9, uses and miscellaneous **302-01-2**, uses and miscellaneous 630-08-0, uses and miscellaneous 1333-74-0, uses and miscellaneous 1590-87-0 7440-37-1, uses and miscellaneous 7440-59-7, uses and miscellaneous 7446-70-0, uses and miscellaneous 7637-07-2, uses and miscellaneous 7647-19-0 7664-41-7, uses and miscellaneous 7719-12-2 7727-37-9, uses and miscellaneous 7782-44-7, uses and miscellaneous 7782-79-8 7783-26-8 7783-29-1 7783-54-2 7783-55-3 7783-56-4 7783-61-1 7783-70-2 7784-34-1 7784-35-2 7784-36-3 7784-42-1 7789-66-4 7803-51-2 7803-52-3 7803-62-5, uses and miscellaneous 10024-97-2, uses and miscellaneous **10026-04-7** 10028-15-6, uses and miscellaneous 10036-47-2 10102-03-1 10102-43-9, uses and miscellaneous 10102-44-0, uses and miscellaneous 10294-33-4 10294-34-5 10544-72-6 10544-73-7 12008-19-4 12033-49-7 12164-94-2 13465-77-5 13517-13-0 13597-73-4 13830-68-7 13940-57-3 14521-14-3 14521-15-4 14693-61-9 14693-65-3 14868-53-2 18283-93-7 18288-22-7 18433-84-6 19287-45-7 19624-22-7 23777-80-2 41916-72-7
(in amorphous hydrogenated silicon electrophotog. photoconductor prodn. by **chem. vapor deposition** process)

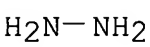
L41 ANSWER 28 OF 28 HCA COPYRIGHT 2005 ACS on STN
59:68648 Original Reference No. 59:12626e-f Reaction of silicon tetrachloride with N,N-dimethylhydrazine and **hydrazine**.
Gibson, George; Schug, Kenneth; Crook, Joseph R. (Illinois Inst. of Technol., Chicago). Inorg. Chem., 2(4), 876-8 (Unavailable) 1963.
AB Following previous work on Si-N compds. (Fessenden and Fessenden, CA 55, 20745f), a compd. was prepd. having four N atoms bonded to one Si atom. The exothermic reaction SiCl4 + 8Me2NNH2 .fwdarw. Si(NHNMe2)4 (I) + 4Me2NNH2.HCl was carried out under strictly anhyd. conditions in an inert atm. for which a special app. was devised. Based on the amt. of SiCl4 used there was an 80% yield I, m.

64.degree.. Infrared and proton magnetic resonance spectra were consistent with the formulation of I. A similar reaction carried out between SiCl4 and N2H4 resulted in a white residue analyzed as SiCl0.8(N2H4)2.9. It is possible the substance was polymeric. Owing to its insoly., no further information was obtained.

IT **10026-04-7**, Silicon chloride, SiCl4
(reaction with N2H4 and Me2NNH2)
RN 10026-04-7 HCA
CN Silane, tetrachloro- (9CI) (CA INDEX NAME)



IT **302-01-2**, **Hydrazine**
(reaction with SiCl4)
RN 302-01-2 HCA
CN Hydrazine (7CI, 8CI, 9CI) (CA INDEX NAME)



CC 33 (Aliphatic Compounds)
IT Nuclear magnetic resonance
Spectra, infrared
(of tetrakis(2,2-**dimethylhydrazino**)**silane**)
IT **10026-04-7**, Silicon chloride, SiCl4
(reaction with N2H4 and Me2NNH2)
IT 57-14-7, **Hydrazine**, 1,1-dimethyl- **302-01-2**, **Hydrazine**
(reaction with SiCl4)